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COMPUTERWORLD

ACE hand could weaken following Mips buyout

BY MARYFRAN JOHNSON
CW STAFF

MOUNTAIN VIEW, Calif. — Silicon Graphics, Inc. and Mips Computer Systems, Inc.'s surprise elopement last week received blessings from some Silicon Graphics customers but drew more cautious reactions from industry observers.

Because both firms are key members of the Advanced Computing Environment initiative, Silicon Graphics' proposed acquisition of Mips could have an unsettling effect on ACE, analysts said, even though the union was praised last week by fellow ACE members Digital Equipment Corp. and Microsoft Corp. DEC has an equity investment in Mips.

"SGI is going to have to keep the other vendors calmed down about ACE and make sure they don't start jumping ship to the Sun SPARC chip or [IBM's] RS/6000," said Bob Batten, general manager at Wallingford, Conn.-based Precision Products, Inc., which uses Silicon Graphics workstations for its aerospace contract engineering work.

"The good news for ACE is that the Mips technology will arrive in a timely way and with more confidence," said Robert Herwick, an analyst at Hambrecht & Quist, Inc. in San Francisco. "The negative is that some members will have trouble believing it's still a level playing field. I can't imagine this move is real popular down in Houston" at Compaq Computer Corp.

The two hardware platforms for ACE are Mips' R4000 re-

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Help on the way

Mips Computer Systems needs the strong financial backing it would receive via a proposed acquisition by Silicon Graphics

In millions

1991	Total revenue	Net income
1Q	**$43.9**	**$.624**
2Q	**$44.5**	**$(.597)**
3Q	**$32.7**	**$(37.3)**
4Q	**$47.3**	**$(2.6)**
Total	**$168.5**	**$(34.7)**

CW Chart: Michael Siggins

Users opening to Windows

But few of the many licensees are making corporate commitments so far

BY ROSEMARY HAMILTON
and CHRISTOPHER LINDQUIST
CW STAFF

REDMOND, Wash. — Microsoft Corp. is not winning strategic-level commitments to Windows from corporate customers at a rapid rate, but it is getting its foot in a lot of doors.

At 15 sites polled recently, most users have Windows installed. Several company executives said that while they will not anoint it as the sole desktop standard, Windows is starting to play a key role in their overall corporate computing strategy.

Some managers said they did not seek out Windows for such a role but are now including it because of its increasing use by end users.

"It would be naive to think we will not have Windows on a lot of our clients," said John Roberts, vice president of corporate research and technology at Unum Corp., an insurance company based in Portland, Maine. "We need to deal with it."

While Unum does not yet have an official policy to support Windows, about 300 of its 4,000 desktop users are now active Windows users, Roberts said. Most of the 300 users "have a minimum of 8 to 10 applications" running under Windows, he added.

Invisible users

Microsoft's own figure of 10 million Windows licenses sold does not indicate the level of commitment at corporations.

Creative Strategies Research International, Inc. in Santa Clara, Calif., completed a study of 100 large companies in December 1991 and found that slightly more than half that had Windows were truly using it. "We certainly believe that [at least] 9 million have shipped, but when it comes to [actual] usage, we'd say it's about 55%," said Tim Bajarin, president of Creative Strategies.

"There's still a lot of work to do; we're not ignoring that fact," said Richard Tate, senior marketing manager for the Corporate Account Technical Marketing Team at Microsoft. He estimated that about 10% of the world's personal computers currently run Windows.

Many users could be waiting for the imminent release of both

Continued on page 8

GTE phones home with client/server

BY JEAN S. BOZMAN
CW STAFF

IRVING, Texas — GTE Telephone Operations has decided to encircle its IBM mainframes with an extensive, Unix-based client/server network from Hewlett-Packard Co. in hopes of shielding users from having to know where data is located.

The three-year, $100 million project should save the company millions of dollars annually beginning this year, a GTE spokesman said.

Divide and conquer

GTE's client/server strategy aims to achieve these goals:

- Cut costs through shortened application development and reduced training on HP workstations, servers.
- Make access to distributed data transparent to user.
- Keep IBM mainframes as data repositories; phase out Honeywell system.

According to Chuck Hanna, assistant vice president of information management/technology at GTE Telephone's Information Technology Group, cost reductions are expected to come from several areas at the $15.7 billion division of $20 billion GTE Corp.: volume discounts on HP hardware and software, shortened application development cycles and reduced training for GTE Telephone customer service representatives.

"Eventually, we will drive our business through client/server technology, but our mainframes will continue to serve as data engines," Hanna explained. "I honestly don't believe we will turn the mainframes off for many, many years.

"We have invested in millions of lines of mainframe code," Hanna continued. "The problem was, how do you move from that to something where you can utilize cheaper MIPS?"

GTE Telephone maintains four large data centers in the U.S. that house large-scale IBM mainframes providing up to 200 million instructions per

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Rattled Schwab relocates IS

Broker latest to leave Bay area quake zone

BY JAMES DALY
CW STAFF

Janell Genovese

SAN FRANCISCO — The tremors that occasionally shake windows and doors in Northern California have also jangled the nerves of The Charles Schwab Corp.'s information systems department. It plans to move its data center off the San Andreas Fault to Phoenix by the end of next year.

"We don't like having all our eggs in one seismically active basket," said Mark Barmann, chief information officer at the $570 million financial services firm. The fast-growing discount broker plans to open a 100,000-sq-ft computer facility and adjacent telephone service center at the Phoenix site as part of a move to transfer key computational resources away from the shaky Bay area.

Schwab suffered only minor damage in the Loma Prieta earthquake that toppled buildings and freeways in October 1989, but "we no longer want to cheat fate," Schwab Vice President Mark Thompson said.

Schwab joins the ranks of Bay area companies such as Clorox Co., The Gap, Inc., Intel Corp. and Apple Computer, Inc., which have cited seismic trepidation as the reason for moving their data centers out of the earthquake zone.

The shift also marks the latest in a series of relocations by

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Frito-Lay CIO Charles S. Feld is leaving the snack-food maker after 11 years. Page 6.

DEC tries to persuade wary users to make Alpha migration. Page 4.

Tool offers Windows access to mainframe data. Page 8.

Integration Strategies — The Macintosh is gaining popularity on corporate networks but still has a long way to go. Page 69.

NEWSPAPER

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"Most CEOs don't like missionaries — they think of them as inspired dilettantes. The CIO has to be an adviser to top management."

ARTHUR STERN
MAGNAVOX

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The 5th Wave

"COMPATIBILITY? NO PROBLEM. THIS BABY COMES IN OVER A DOZEN DESIGNER COLORS."

EXECUTIVE BRIEFING

■ **Microsoft's Windows emerges as a key component** of corporate desktop computing strategies. While few companies are selecting it as the sole corporate desktop standard, many are including it in overall corporate strategies because of its increasing use by end users. **Page 1.**

■ **Technology in the 21st century** will enable massive sharing of computer power globally through improvements in wireless broadcast. Advances affecting individual PCs, such as clustering multiple CPUs on a board, will bring 200 MIPS or more to individuals' machines. By the year 2000, memory barriers will be just a memory with the arrival of terabyte-size, solid-state, nonvolatile memory holding 400 million pages of text. **Page 77.**

■ **Frito-Lay's Charles Feld is the latest prominent IS executive** to leave his company. Feld, winner of several awards for IS innovation, will start his own consulting firm but will stay on until his successor is found. **Page 6.**

■ **Hiring managers are beginning to favor job applicants who possess** both a degree and technical certification. **Page 89.**

■ **Silicon Graphics and RISC chip vendor Mips Computer Systems** are tying the knot this June. The deal turns Mips into a Silicon Graphics subsidiary with more secure financial backing to pursue R&D activities and gives Silicon Graphics control of its own processor destiny. **Page 1.**

■ **Lotus highlighted new development efforts last week** that should be showing up in products over the next 12 to 15 months. These include the Chronicle technology to create workgroup spreadsheets and new applications for data query and software management to run on its Notes workgroup platform. **Page 4.**

■ **Is the big-league insurance market ready for outsourcing?** Users are far from sure, but they don't rule it out. Meanwhile, IBM outsourcing subsidiary ISSC and insurance software player Policy Management Systems are joining forces in a venture that could jump-start the bandwagon. **Page 12.**

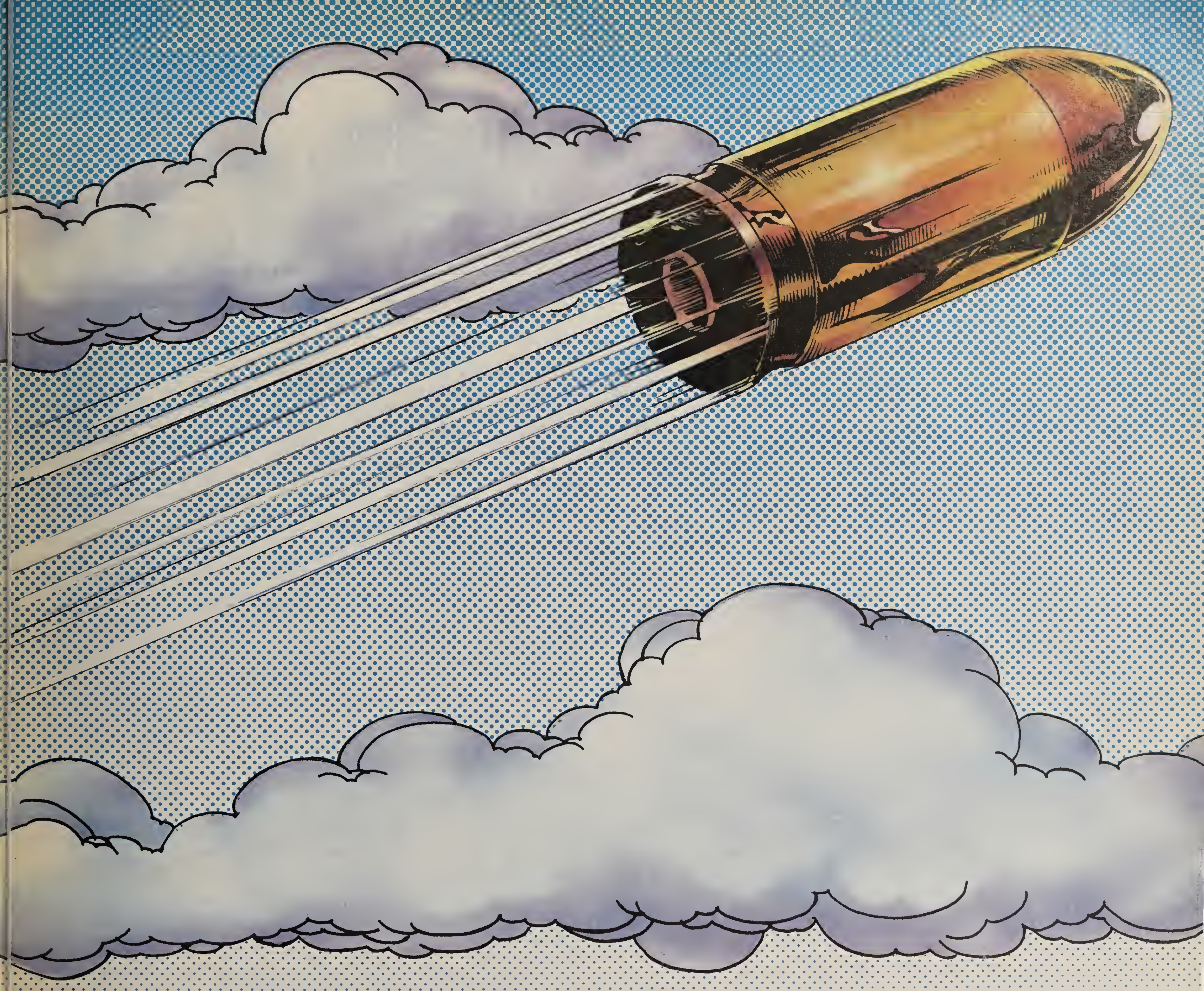
■ **The tremors that rattle Northern California** have also rattled the nerves of Charles Schwab's IS department, which plans to move its data center away from the earthquake-prone zone. The fast-growing, $570 million financial services firm says it will open a 100,000-sq-ft computer facility in Phoenix by the end of 1993. **Page 1.**

■ **CIOs must reinvent themselves in order to become true business partners,** leading management experts and CEOs say. Management sage Peter Drucker says CIOs should provide more information from outside their companies, while a new Booz Allen & Hamilton survey suggests that few IS organizations have evolved to a 1990s model. **Page 6.**

■ **The application development group is undergoing change.** Those teams of IS professionals that were given responsibility for testing products and identifying standard development tools for their corporations have made adjustments. They have learned to integrate PC concepts into their plans and, in some cases, have been made expendable by downsizing. **Page 65.**

■ **There is no peace dividend for the aerospace industry,** and IS groups in that sector have found themselves dealing with drastic budget cuts, demands for efficiency and the need to find new business. **Page 85.**

■ **On site this week:** The flood of data from more than 100 business groups made it impossible for Otis Elevator to deliver useful information to corporate headquarters. But by building its own Windows-based system with off-the-shelf software, Otis has increased productivity and made data more accessible. **Page 35.**



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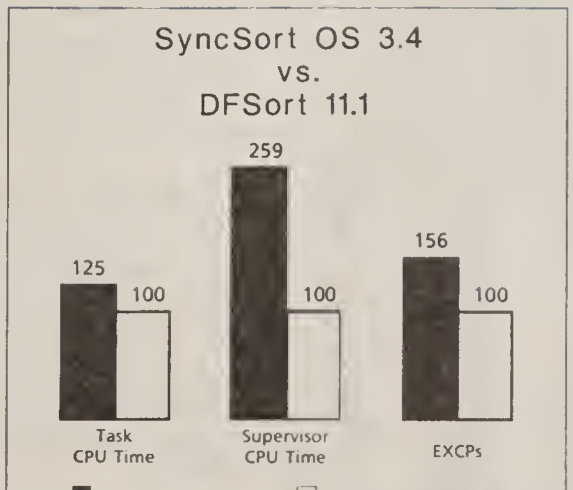

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DEC lures users in the Alpha direction

Some sites remain cool to calls to trade up to more costly horsepower in 'Alpha interim' period

BY SALLY CUSACK
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. is trying to whet customers' appetites for upgrades and new systems purchases by outlining a migration path for trade-ups to its upcoming Alpha products.

However, in interviews last week, some DEC users said they are not yet ready for the extra horsepower or expense of the new systems.

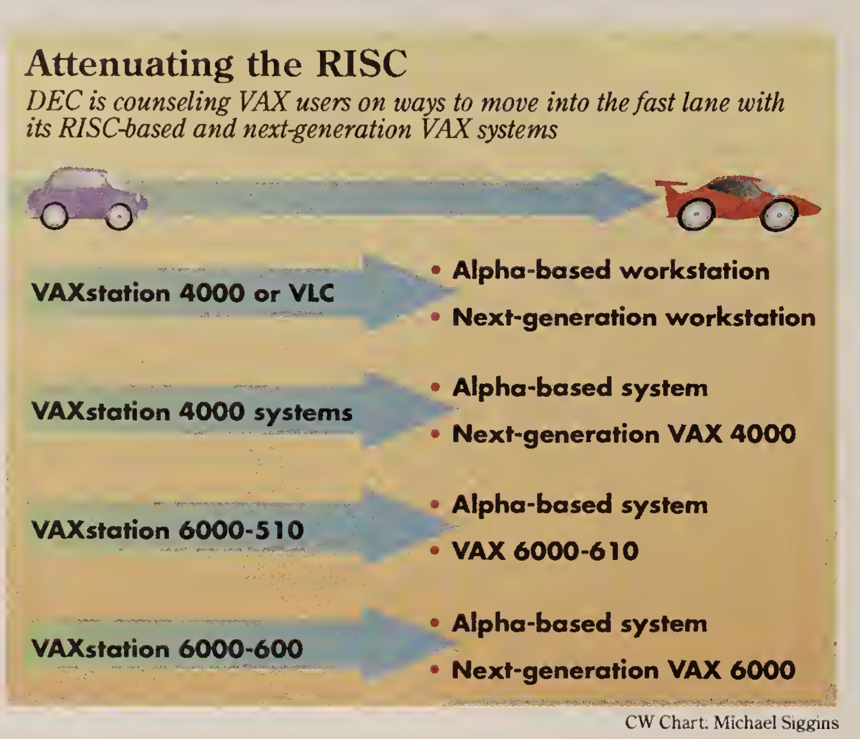
Internal DEC sales documents obtained by *Computerworld* outline aggressive plans to incite customer VAX hardware purchases during this "Alpha interim" period. These include offering VAX-to-Alpha and Mips Computer Systems, Inc.-to-Alpha trade-up programs with new VAX systems and VAXstation products and, for some customers in DEC's leasing programs, a plan to offer a "financially attractive bridge" from current technology to the new Alpha technology.

According to industry analysts, DEC will also provide a board-upgradable Alpha transition box, code-named Laser, possibly as early as this spring's DECworld, but by year's end at the latest. These boxes would be upgradable simply by swapping out the CPUs.

Terry Shannon, a principal at Gander Resources, a consulting firm in Ashland, Mass., predicted that the transition box technology would be a four-processor NVAX CMOS machine capable of supporting both future midrange VAX and Alpha products. NVAX is the internal name for the VAX complex instruction set computing chip, which is from the same generation of technology as the new Alpha chip.

Attenuating the RISC

DEC is counseling VAX users on ways to move into the fast lane with its RISC-based and next-generation VAX systems



CW Chart: Michael Siggins

DEC declined to comment, saying it does not discuss unannounced products.

Despite DEC's promises of seamless migration technology and customer investment protection, several users seem to be holding off on immediate purchases.

David J. Foss, computer science department section leader at The Glidden Co.'s Strongsville, Ohio, paint research center, said his company currently has 220 end users on a VAX 6000 400. He said he does not expect to need more power for at least two years.

"We're looking at the transition boxes, but we haven't decided anything yet. It's still a little early," said Paul Stieman, associate vice chancellor for computing at the University of Pittsburgh, a large DEC installation site. Stieman added that the soft economy is another factor affecting equipment purchases.

No crying need

Larry Stiefvater, a research principal at Kraft General Foods Research Technology Center in Glenview, Ill., said the center will not upgrade its clustered 6520 systems in the next 18 months to two years.

"We have plenty of horsepower," Stiefvater said. "We've heard about the transition boxes, but they are not really relevant to our needs right now."

A longtime DEC customer on the West Coast said his company could not even consider such a transition box at this time because of capital funding considerations.

Meanwhile, VAX 6000 users may soon have some hard choices to consider. A soon-to-be-released report from Technology Investment Strategies Corp. (TISC), a research firm in Framingham, Mass., said the new transition box will replace the VAX 6000 series.

While existing 6000 users will not be able to make board upgrades to the transition box, the transition box will be board-upgradable to the actual reduced instruction set computing -based Alpha systems when they become available next year.

A VAX killer?

The report goes on to say that VAX 6000 Model 600 sales will be low because of the industry discussion about Alpha. DEC watchers have long voiced concerns about the potential for Alpha to kill current VAX sales.

"The announcement of transition boxes will push the price of existing systems down, and the 6000/600 line will get hit," said Karlyn Gale, a senior analyst at TISC.

There are several steps VAX 6000 users must take when upgrading to a 500 or 600 model, including swapping out all CPU and memory boards. Depending on the system, upgrading to a 6000 Model 500 or 600 could be both a major and a costly overhaul.

Gale recommended that VAX 6000 200, 300 and 400 users delay making purchases and wait for the Alpha upgrade box to be delivered.

Notes snares spotlight at Lotus demonstration

BY ROSEMARY HAMILTON
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. made another push last week to prove that it is an innovative developer by demonstrating several new technologies that will show up across its product line in the next 12 to 15 months.

Lotus' Landry *said Notes will offer Windows NT, Macintosh and Unix support*

Although executives ran through a series of product demonstrations designed to show off 1-2-3 advancements (see chart), its Notes workgroup software seemed to steal the day. Lotus executives had a laundry list of Notes improvements that included enhanced functions to the core product, such as video and voice support, and new applications to tie into it.

On the Notes agenda

Notes applications currently under development are Lynx, which is being designed to manage the distribution of software and upgrades, and Notebook, a tool kit said to develop queries to Notes- and SQL-based databases.

Lynx is about to go into beta testing, according to Jim Manzi, Lotus' chief executive officer. No schedule was provided for Notebook. Both, however, will be officially announced in 12 to 15 months.

In addition, John Landry, the company's chief technical officer, said Notes will support Microsoft Corp.'s Windows New Technology operating system, which is due out later this year. He also confirmed that both Apple Computer, Inc. Macintosh and Unix support will be announced for Notes within 15 months.

Manzi described Notes as a "defining product, like 1-2-3 was in the 1980s." Company executives also stressed that the core spreadsheet business remains equally strategic.

Robert Weiler, senior vice president of Lotus' North American business group, said the company's share of the spreadsheet market is on the rebound after a poor showing in the first half of last year. Weiler blamed the drop in market share in that six-month period, which he called "one of our lowest," on giveaway programs by competitors.

Weiler said the revenue share in the first half of 1991 dropped to 48%. However, he said Lotus held 61% of all spreadsheet sales, including Windows, by the end of last year. In the DOS spreadsheet market, Lotus claims to own 91%.

Spreading the gospel

Lotus' spreadsheet plans include the following:

Product: 1-2-3 for Windows (Release 1.1).
Ship date: "Within weeks."
Features: Load time and installation improvements; "turbo scroll" option that allows users to quickly get to bottom of screen.

Product: 1-2-3 for Windows (Release 2.0).
Ship date: Late 1992.
Features: Simplified commands and menus; first implementations of the Chronicle workgroup technology and support for database query via Datalens.

Product: 1-2-3 for DOS (Release 2.4).
Ship date: 1992.
Features: Brings user interface, ease-of-use features implemented in Windows-based spreadsheet to the DOS version. Will include Lotus SmartIcons.

Product: Improv for Windows.
Ship date: 1992.
Features: Provides dynamic views of data, used to analyze data beyond typical spreadsheet perspective. Fewer formulas to learn; allows more liberal use of words in spreadsheet.

CW Chart: Michael Siggins

"We are not betting on one or the other," Manzi said, in reference to the spreadsheet and Notes products. "We are able to do both. What a difference a decade makes."

Some of the other newer technologies demonstrated last week will be added to spreadsheets and other Lotus applications. Chronicle, the technology Lotus has been developing to "workgroup-enable" applications, will debut in Release 2.0 of 1-2-3 for Windows.

Initially, Chronicle will allow a group of users to work on a spreadsheet together by allowing them to submit alternative values for a spreadsheet in progress. This could be managed with simple file-sharing techniques.

To get "full-blown sharing" capabilities, where users could work with multiple alternatives simultaneously, a customer would be required to install Notes, said Jeff Beir, general manager of the spreadsheet division.

Notes is required to manage the storage and distribution of the alternatives, he said.

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NEWS SHORTS

No reservations about IS here

Holiday Inn Worldwide will invest more than $60 million in new information systems efforts that will include the development of a room reservation system and leasing of Encore property management software from Encore Systems, Inc. The new Holiday Inn Reservation Optimization system will allow a more flexible room rate structure and capture more data about customers, executives said.

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Toolmaker to exit IS services

Black & Decker Corp., the Towson, Md.-based maker of power tools, said last week that it will once again try to sell PRC, Inc., its IS and services business. The unit was acquired as part of a 1989 purchase of Emhart Corp. Black & Decker had intended to sell PRC immediately but gave up 18 months later when it could not find a buyer. A public offering of common stock is planned that could net Black & Decker about $350 million.

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Still hot on the trail

A spokesman said IBM is still investigating the third-party reseller market after uncovering duplicate serial numbers allegedly used to conceal stolen parts used in IBM Application System/400 midrange systems. No other such illegal uses have been uncovered, he added.

……

Silent lamb speaks

A man charged with stealing computer boards from Digital Equipment Corp. between February and October 1990 recently received the severed head of a lamb — wrapped in towels — through the U.S. mail. The box arrived at the Lexington, Mass., home of Edward Desmond Jr. on Feb. 28. Desmond had cooperated with the government during part of the 2½-year investigation, which led to the indictment of 16 people. A plea agreement with Desmond was reportedly rescinded after he was allegedly caught committing other crimes.

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Electronic blips stymie FBI wiretaps

Difficulties tapping advanced digital telephone networks for criminal investigations have inspired the Federal Bureau of Investigation to propose legislation requiring carriers to modify their networks to accommodate court-approved wiretaps. The multimillion dollar cost of re-engineering the networks would be borne by rate payers. Civil liberties groups said a built-in tapping capability might encourage overly broad government surveillance.

……

Short Takes

Intel Corp. signed a letter of intent with **VLSI Technology, Inc.** to discuss a technology-sharing pact that could result in Intel acquiring a minority stake in VLSI. . . . **Apple Computer, Inc.** has named Morris Taradalsky vice president and general manager of its Enterprise Systems Division. . . . **Analog Devices, Inc.** is expected to announce today a method for getting sound, voice and data onto a single board. It hopes to make this approach a standard. . . . **Software AG of North America, Inc.** and **Hewlett-Packard Co.** will jointly port the Unix versions of Software AG's Adabas, Natural and Network products to the HP 3000 environment under the MPE/iX operating system. . . . The **Software Publishers Association** has settled a copyright infringement suit against **Melco Industries, Inc.**, which has agreed to pay $30,000, stop using illegal software copies and institute a formal antipiracy policy. . . . **NCR Corp.** said it had received Federal Communications Commission certification for its System 3125 notepad, which it will begin shipping in volume. . . . **Microsoft Corp.** and the **FBI** recently raided four Silicon Valley companies, seizing bootleg copies of MS-DOS 5.0 and Windows 3.0 as well as associated manuals with a street value of more than $180,000. The tip-off came when the distributors tried to sell MS-DOS 5.0 separately. . . . The **Petrotechnical Open Software Corp.**, a nonprofit user organization of seven oil companies, has joined the **Object Management Group**.

More news shorts on page 16

IS chief Feld leaves Frito-Lay

BY CLINTON WILDER
CW STAFF

DALLAS — Charles S. Feld, the Frito-Lay, Inc. information systems executive who pioneered the firm's award-winning use of handheld computing and marketing database technology, is the latest prominent IS chief to resign.

Feld told Frito-Lay recently that he will leave the snack food maker to start his own consulting firm. He will stay on as vice president of MIS until Frito-Lay names a successor.

Frito-Lay executives and outside observers said Feld's departure will leave a difficult void to fill. At 49, he has been Frito-Lay's top IS executive for 11 years. "Charlie has a unique quality in the systems world in [terms of] understanding what the user needs and having the ability to translate that into a good system," said Ronald Rittenmeyer, the firm's vice president of operations. He and Feld together won the 1988 Society for Information Management Partners in Leadership Award for Frito-Lay's handheld computer-based sales tracking system.

Frito-Lay's Feld *to leave post to start consulting firm*

Feld is widely credited with having played a critical role in transforming Frito-Lay from a national mass marketer of a small number of products to a more flexible firm that sells different snacks to match regional preferences.

One consultant close to the company, who requested anonymity, speculated that Feld had accomplished as much as he could within the current infrastructure: "Frito-Lay is a very aggressive environment with high expectations, and the infrastructure that is so highly touted may be becoming a constraint."

Frito-Lay will consider both inside and outside candidates for the position, a spokeswoman said. Frito-Lay plans to fill Feld's job as it is.

Last year, Feld led the executive committee that reorganized functions throughout Frito-Lay, eliminating 1,800 of the firm's 26,000 jobs in the U.S.

CIOs not up to snuff as active business leaders

BY CLINTON WILDER
CW STAFF

SAN DIEGO — Despite years of drum-beating to the contrary, most chief information officers still lack the credibility and recognition needed to make them true players on their companies' senior business management teams.

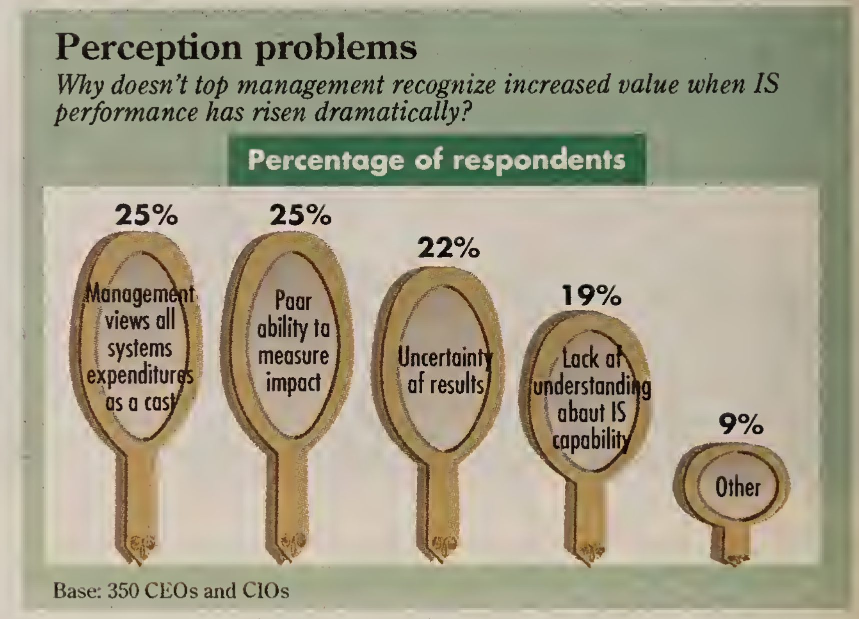
That was the message sounded by several speakers at the CIO Perspectives Conference, sponsored here last week by *CIO Magazine*. Speakers exhorted more than 500 information systems executives to move away from running IS as an automation utility and deliver business value.

Very few IS organizations have evolved beyond the reactive, automation utility model of the past, according to a chief executive officer/CIO survey presented at the conference by Booz Allen & Hamilton, Inc. consultants. Of 350 organizations surveyed, only 12% said their vision of IS was aggressive and "owned" by senior management; only 3% said IS budgeting was based on market and customer measures; and just 10% said they delivered applications in a business-enabling way.

Terms of confusion

"Most IS organizations are still managed as service stations," said Steve Perkins, vice president of the IS consulting group at New York-based Booz Allen. "We believe this is because the new model is not well-understood."

The uncertainty of how best to "reinvent" the CIO was echoed by Jack Livingston, CIO at National Car Rental System, Inc. "One of the problems is that there are no generally accepted principles, as there are for accounting and other professions," Livingston said in an interview.



Source: Booz Allen & Hamilton, Inc. 1992 CEO/CIO survey

CW Chart: Janell Genovese

One CIO who has successfully transformed himself into an active businessman is American Express Co.'s B. Garland Cupp, said Nigel Brooks, vice president of worldwide technology management at American Express Travel Related Services Co. Although Cupp started at Amex in 1978 as a technically oriented head of systems development, he is now primarily a business planner reporting to the CEO.

"He understands that business must be done in a business way, not a systems way," Brooks explained. "So he can fulfill the critical mission to educate senior management."

Such education must be handled in a tactful, nonintimidating way without technology arrogance, said Arthur Stern, retired president of Magnavox Corp.'s Advanced Products and Systems Co. "Most CEOs don't like missionaries — they think of them as inspired dilettantes," Stern said. "The CIO has to be an adviser to top management, not a haughty individual."

Echoing an oft-sung refrain, Peter F. Drucker, president of the Claremont Graduate School of Business, said CIOs remain too focused within the boundaries of their corporations. "Sit down with the chief engineer, chief marketer and CEO and find out what information they need," he said. "Then make sure that they get it."

Fred Rosen, chairman and CEO of Ticketmaster, Inc. in Los Angeles, said CIOs must avoid technical jargon when communicating with senior business executives. "You have to understand that in my business, artificial intelligence is basically chemically induced," he said.

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Visual Basic gets enhancements

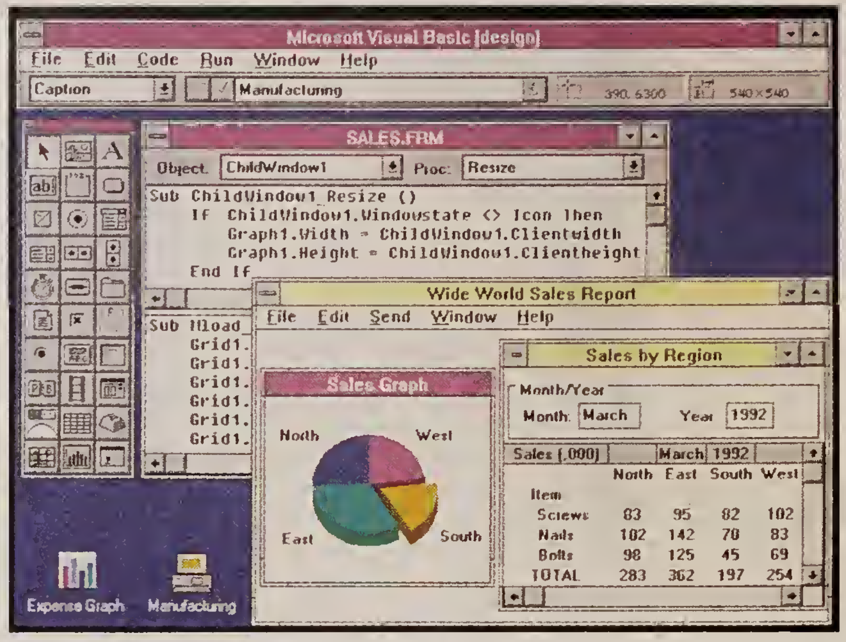
BY CHRISTOPHER LINDQUIST
CW STAFF

REDMOND, Wash. — Microsoft Corp. is looking to shoot down the “prototyping tool” moniker that is often attached to its Visual Basic development environment by enhancing the product with an add-on containing more than 15 new controls and features.

The Professional Toolkit for Visual Basic will also provide access to several features of the as-yet-unreleased Windows 3.1 and Windows for Pen Computing platforms, including multimedia, handwriting recognition and Object Linking and Embedding.

Users contacted were particularly impressed with new grid control that allows easy display of tabular data and can also be used as a menuing system. “It's not very memory-intensive and is faster” than the previous grid-creation methods available under Visual Basic, said Selden McCabe, a research specialist at Sundstrand Data Control here.

Another feature — the ability to place bitmaps on buttons — also attracted attention. Developers can now use icons instead of buttons or make buttons different colors to create a more appealing control panel.



```
Sub ChildWindow1_Resize ()
    If  ChildWindow1.Windowstate <> Icon Then
        Graph1.Width = ChildWindow1.Clientwidth
        Graph1.Height = ChildWindow1.Clientheight
    End If
```

```
Sub Hload_
    Grid1.
    Grid1.
    Grid1.
    Grid1.
    Grid1.
    Grid1.
```

Sales (,000)	March 1992			
	North	East	South	West
Item				
Screws	83	95	82	102
Nails	102	142	70	83
Bolts	98	125	45	69
TOTAL	283	362	197	254

Professional Toolkit for Visual Basic*'s features will include faster grid-creation methods and support for pen-based computing*

Also included with the Professional Toolkit is support for pen-based computing that will allow users to write applications that can accept digital pen “ink,” such as sketches or handwriting, as a data type or to access the pen-recognition engine.

Additional functions

The Toolkit will also include the following features:

- A Windows Help Compiler.
- An on-line reference for the Windows application programming interface.
- A setup kit for building installation programs.
- A custom control development kit.
- A coupon for a free copy of Wall Data, Inc.'s Rumba Tools for Visual Basic, which allows users to develop Windows front ends to mainframe applications.

The Toolkit is available now for a retail price of $299. Visual Basic bundled with the Professional Toolkit will have a list price of $495.

Windows tool offers host access

BY CHRISTOPHER LINDQUIST
CW STAFF

SEATTLE — Microsoft Corp. and Information Builders, Inc. last week unveiled a plan to jointly develop a driver that enables Windows applications to more easily access data from a multiplicity of database systems.

The driver, based on Microsoft's Open Database Connectivity (ODBC) specification, is due to be released later this year. It will allow ODBC-compliant Windows applications to access the more than 50 databases supported by Information Builders via its client/server Enterprise Data Access/SQL (EDA/SQL) software. This would include data stored in IBM's Information Warehouse, the company's architecture for allowing access to multiple data sources across an enterprise.

“This is a big, big step in the direction of literally providing the data that people can use at their fingertips,” said Paul Hessinger, chief technology officer at Softlab/BMW in Atlanta. He said that the announcement gave some meat to Microsoft's Windows Open Services Architecture (WOSA) and ODBC standards.

WOSA is Microsoft's plan to create a set of standard application programming and service interfaces that would allow easy communication among applications on various platforms. ODBC is the database component of that set of standards, and the EDA/SQL announcement was the first actual product announcement related to ODBC.

One of the more important aspects of the announcement may be that the EDA/SQL will give ODBC applications access to IBM DB2 and IMS data. This access would come without IBM directly having to support ODBC or Windows.

“Microsoft is recognizing the same customer requirements we did when we announced the Warehouse in September,” an IBM spokesman said. “This is, in a way, an endorsement of that approach.”

Regardless of who is endorsing whom, the agreement provides yet another pipeline for the communication of data across heterogeneous environments — something that is bound to help users with diverse systems.

“This helps tools vendors and users who are trying to decide what standard to support,” said John Robertson, chairman of the SQL Access Group, a consortium of database vendors.

Few Windows licensees making commitments so far

CONTINUED FROM PAGE 1

Windows 3.1 and IBM's 32-bit OS/2 2.0 before making any decisions, according to Mack Cain, a senior research analyst of desktop computing strategies at Meta Group, Inc. in Westport, Conn.

Half the battle

For Microsoft, part of the battle lies in persuading management to adopt Windows as readily as users at corporations such as Unum.

Executives at 7 out of the 15 corporations surveyed by *Computerworld* said they have no plans to standardize solely on Windows as their corporate desktop platform.

However, Windows is now moving beyond the test-and-play phase at these companies and is emerging as a key component in overall corporate desktop strategies that include a mix of DOS, IBM's OS/2 and Unix.

Among the remaining eight sites polled, four had assigned Windows a strategic role for corporate desktop computing. The other four said Windows has essentially been shut out by OS/2.

By the end of 1991, many users at Prudential Investment Corp., one of the five business sectors of Prudential Life Insurance Co., had Windows installed on their PCs, but few of them were doing much with it beyond memory management, according to Robert Hecht, vice president of investment systems.

“What's happened in the last few months, as products like 1-2-3 for Windows and WordPerfect for Windows have come out, is more people are putting together a portfolio of Windows applications and using them together in the way that Windows was really designed to be used,” as a desktop applications manager, Hecht said. Previously, about 10% of the 1,500 users were using Windows, while the remaining 90% were using it “almost exclusively for memory management,” he added.

Hecht is one of several users who maintains a mixed environment. While Windows use is increasing, the company is also developing OS/2 applications. He said the only official strategy at the company is to “implement technology based on business needs.” IS provides the application that users request, and its particular operating environment is not a deciding factor.

At Canadian National Railways in Montreal, Windows has gradually evolved as the standard user interface environment, said Ronan McGrath, vice president of IS and accounting.

Winner by default

“Windows clearly has a significant level of demand” among users, McGrath said. It is the user interface standard because “there are no other ones. It is coming in gradually, tied to [Windows-based] application software.”

McGrath said the company has not yet selected a desktop operating environment standard. He said he plans to evaluate IBM's OS/2 and Microsoft's as-yet-unannounced Windows New Technology and will perform rigorous comparison tests.

Other users are making more wholesale commitments to Windows, in part because they began working with it two or more years ago and now have a substantial investment in it.

“The head start Windows has would make it very difficult to switch,” said Ben Berry, manager of computer services at the corporate division of Hughes Aircraft Co. in Los Angeles. “It's a mind-set change we'd have to make, and we are just not there.”

Hughes has been a Windows user since 1989 and has several development projects under way. “I personally have evaluated OS/2,” Berry said. “We may use OS/2 for file servers on a network, but they'd have to revolutionize desktop computing to make us switch.”

Still others said they are maintaining a mixed environment because they believe market uncertainties as to which vendor will emerge as the desktop operating system king make it impossible to select one. In that scenario, Windows is now on the mixed list, which includes DOS and OS/2.

“Under the circumstances, we have to wait and see, [but] Windows is a dominant factor at the company,” said Raymond Sasso, chief information officer at J. R. Simplot Co. in Boise, Idaho.

> WINDOWS IS NOW moving beyond the test-and-play phase and is emerging as a key component in overall corporate desktop strategies.

CORRECTIONS

Two vendors were not included in the Feb. 24 Product Spotlight listing of accounting systems for minicomputers: Imrex Computer Systems, Inc., a Great Neck, N.Y., provider of World-Wide Financial System software for the IBM Application System/400, (516) 466-5210, and Compu-Share, Inc., a Lubbock, Texas-based provider of Business Comptrol Series software for the Digital Equipment Corp. VAX, (806) 794-1400.

……

Spinnaker Software Corp., a Cambridge, Mass.-based software vendor, was excluded from a product listing of client/server development tools in the March 9 Product Spotlight. Spinnaker's Personal Access is a Windows-based database access and reporting tool that builds queries, reports and applications that access a variety of databases (617) 494-1200.

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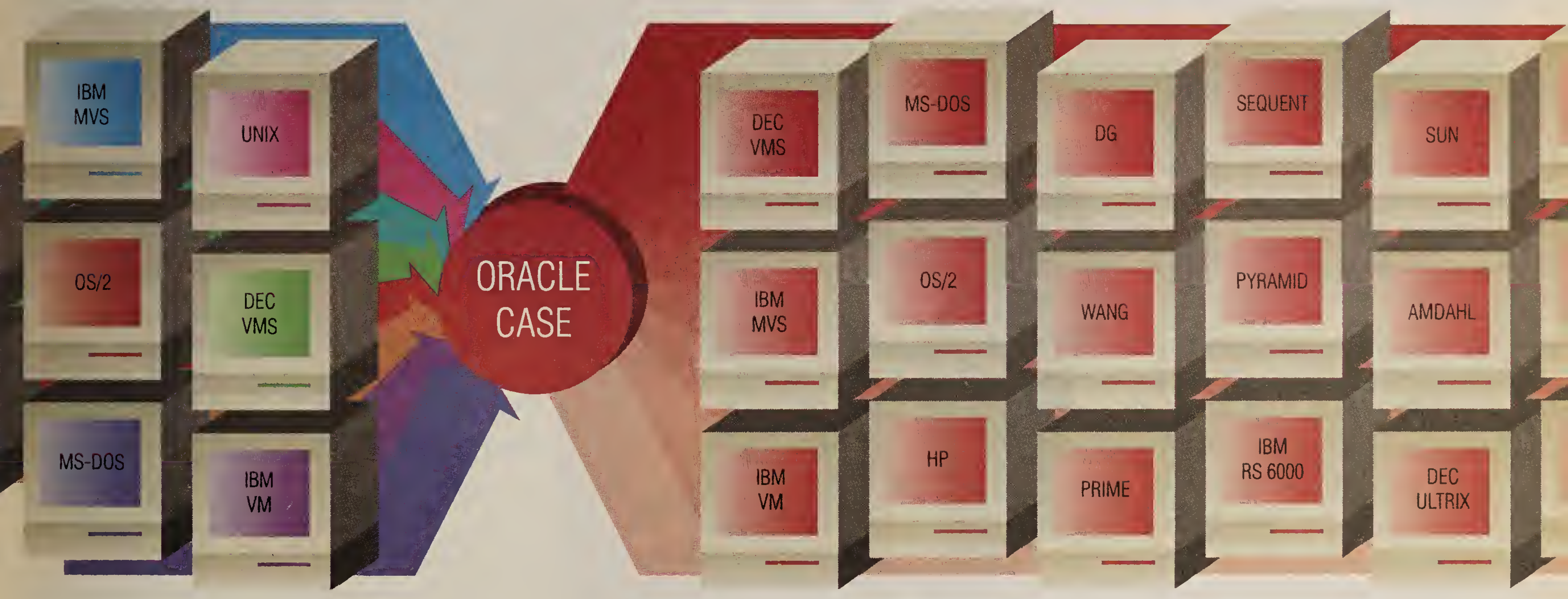

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Oracle offers users advice on migrating to Version 7.0

BY JEAN S. BOZMAN
CW STAFF

ROCKVILLE, Md. — An Oracle Corp. executive last week told users to start planning the migration of Version 6.0 database applications to Version 7.0, but he stopped short of disclosing when the long-awaited distributed database would be available.

Speaking at the East Coast Oracle User Group meeting here, Ken Jacobs, Oracle's director of relational database management systems marketing, said the company plans to distribute a migration guide to educate users about how to move applications from Version 6.0 to Version 7.0. Meanwhile, Jacobs said, users should plan to build new applications using Version 6.0 and SQLforms 3.0, an existing tool set that will work with Version 7.0.

User applications developed for Version 6.0 will be able to run without change once Version 7.0 is installed. However, to take advantage of Version 7.0's new features, such as stored procedures, trigger and two-phase commit, users will have to modify their applications, Jacobs said.

Version 7.0, originally planned for release last summer, is not expected to ship until this summer, analysts said. "My guess is that they'll announce Version 7.0 later this year and then give six months' notice that they will no longer support Version 5.0 after 1993," said Donald Feinberg, a program director at Gartner Group, Inc.'s Software Management Strategies Service.

Fourteen customers worldwide have been beta-testing Version 7.0 code since August 1991, Jacobs said.

Users here were interested in learning new details about Version 7.0's features, but some said they were skeptical about the timing of Version 7.0's arrival. "It impressed me then that they were thinking so far ahead, but I'll believe it when I see it," said Lisa Chatterjee, a configuration manager at General Physics Services Corp., a Maryland-based contractor for the U.S. Navy.

Another user, Brian Horn, a database administrator at Raytheon Co.'s Missile Systems Division in Bedford, Mass., said his workgroup started using Oracle 6.0 just about one year ago. "I'd like to see some documentation on Version 7.0 so I can see what it's going to do for me," he said.

Still, there may not be much demand for Version 7.0 — at least not for a while. A number of Oracle customers recently indicated that they are only now begining a migration to Version 6.0 [CW, Feb. 3]. Perhaps with this in mind, Jacobs said it was "high time" for Version 5.0 users to migrate to Version 6.0 just to stay current with Oracle technology.

AT&T services reach Europe

BY ELLIS BOOKER
CW STAFF

HANNOVER, Germany — After years of providing value-added networks and network management services in the U.S. and for U.S. companies with European operations, AT&T globalized its offering last week with a suite of intra-European data services.

Most notably, AT&T said, its Accumaster Management Services centers will now be able to provide a customer with end-to-end management of a global network composed of AT&T X.25 and digital private-line facilities.

Handling the European arena will be AT&T Istel, the UK-based information and networking company AT&T acquired in November 1989. Istel's global network management center will be paired with a companion center in the U.S. A third center will open in the Netherlands by the end of this year, AT&T said.

The company will let customer demand determine whether it adds an Asian Pacific leg to the service.

In addition to its Accunet Packet Service and Accunet Spectrum of Digital Services managed-bandwidth service, AT&T said it would offer trans-European customers network design, provisioning, consolidated billing and management.

Currently, six Western European countries — Belgium, France, Germany, the Netherlands, Spain and Sweden — can access AT&T's value-added data networks. AT&T said other countries will be added to the list by year's end.

Pricing will be handled individually for each customer, explained AT&T officials, who declined to give a ballpark figure for what premium a company will pay for the value-added services.

AT&T also announced last week that J. P. Morgan Co. in New York had signed a three-year, $8 million contract to use AT&T networks and network management services to interconnect the financial institution's local-area networks in 13 countries in Europe, North America, Asia and Australia.

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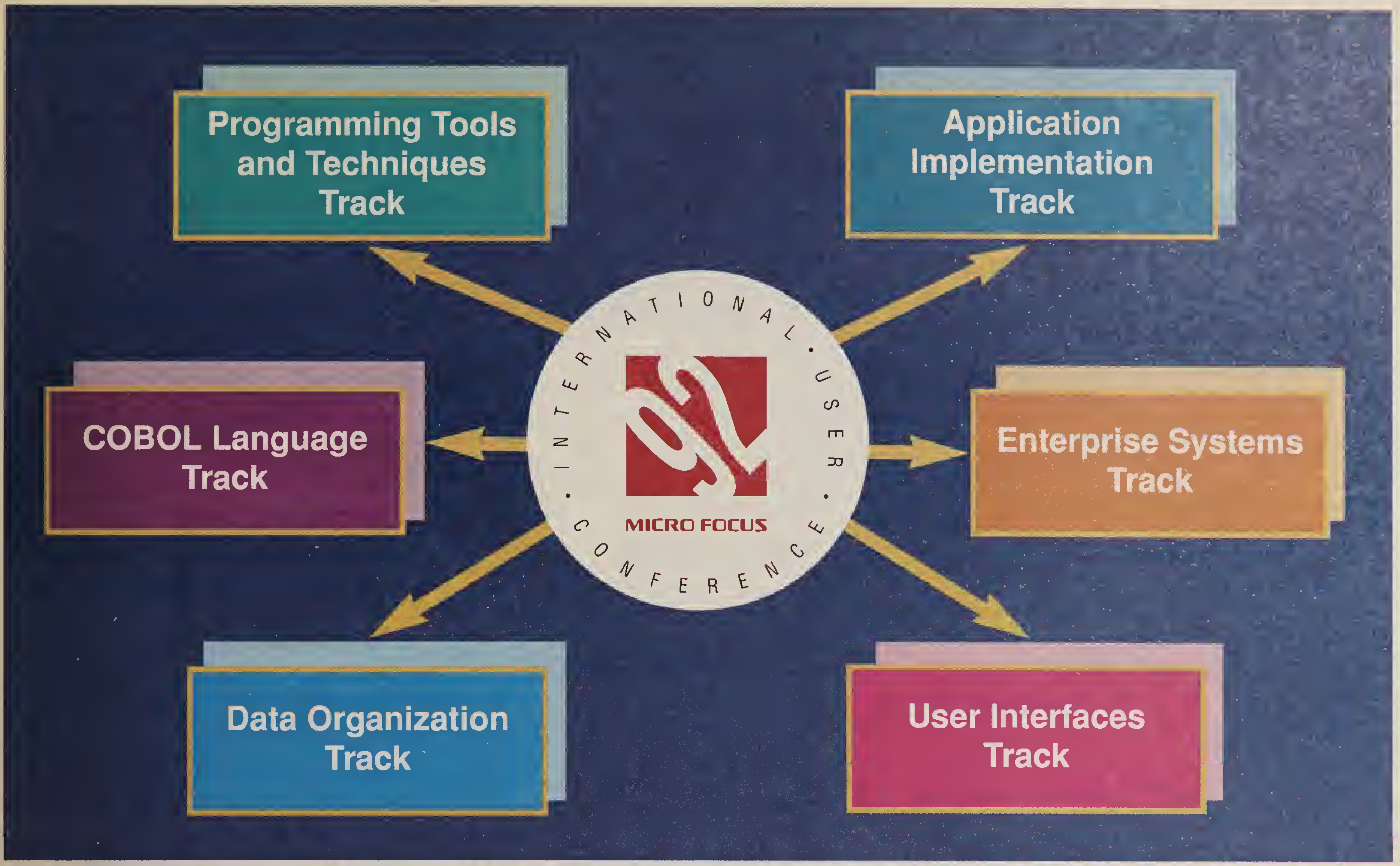
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Insurance firms doubt Big Blue service move

BY NELL MARGOLIS
CW STAFF

TARRYTOWN, N.Y. — IBM, its outsourcing subsidiary Integrated Systems Solutions Corp. (ISSC) and its software partner Policy Management Systems Corp. (PMSC) last week aligned to offer highly specialized services to the insurance industry. Insurance industry information systems managers contacted last week, however, were skeptical of the venture's potential.

Called Inserv, the venture is focused on a lush market: the life, health, property and casualty insurance sector, a multibillion dollar preserve of huge firms and oft-shaky fortunes. This is a market in which computer technology has taken hold, but full-tilt outsourcing has not — yet.

The Inserv tricolor — Big Blue, Baby Blue and somewhat Blue — may be the most impressive flag planted in insurance company soil so far, said one IS executive at a major East Coast-based insurance company who asked not to be identified.

Also attractive is Inserv's approach to enabling users to bypass one of the key impediments to outsourcing.

According to IBM Vice President Ed Archer, who heads up health and transportation vertical businesses at ISSC, every Inserv deal will come complete with PMSC's promise to transfer any of its current software licenses immediately and painlessly to ISSC.

But even the combined credentials of IBM, with its well-known hardware hegemony in the insurance industry, and PMSC, which has piled up a similar record on the software side, may not make insurers salute, the East Coast executive said.

"In this company, we have a large staff of people who are quite competent and who know our business — both technology and insurance," he added. "So in this day and age, with everything driven by the bottom line, I think what it would come down to is, can an outsider give us what we need on a more competitive basis than our own staff can? My guess is no."

At New York Life Insurance Co., recently appointed IS Vice President John Foy echoed this sentiment. Noting the strategic importance of the company's data center, he said, "If we manage as well as we should — and we can — we can do it as effectively for New York Life as an outsider — and preserve the flexibility to be whatever we can be in the mid-1990s."

Inserv is well aware of the resistance it faces, said PMSC President Larry Wilson, whose company is 16.5% owned by IBM. "We're not trying to tell most of our customers that outsourcing is the right answer — it isn't for everyone," he said.

Outsourcing gamble

Nevertheless, Inserv is betting that a healthy number of financially strapped, technology-dependent insurance giants are ready to take a new look at the outsourcing alternative they have successfully skirted so far. While Inserv will not neglect to pitch the bottom-line advantage of outsourcing to companies in search of savings, applications development will be prominent among the services the new entity offers.

"I think we'll see our market driven by the gap between [major insurance firms'] need for new technology and their ability to implement it," Wilson said.

Both ISSC and PMSC are free to ply their services independently under their nonexclusive pact.

IBM to offer PC help

Firm to unveil three-pronged support program

BY CAROL HILDEBRAND
CW STAFF

ATLANTA — IBM is slated to announce a major initiative in the way of service and support Wednesday, when the company discloses a three-pronged program known as HelpWare.

The challenge for IBM, according to Bill Ablondi, an analyst at BIS Strategic Decisions in Norwell, Mass., is "whether they can make it friendly and helpful rather than putting off people under pressure."

REMAKING IBM

The program, which will be unveiled in Europe next month and in other foreign divisions throughout the second quarter, is made up of the following segments:

- **HelpLearn** — a nationwide program of education centers led by IBM-licensed and certified trainers teaching courses on topics ranging from multimedia to OS/2. Educational media include workbooks, video and traditional classroom techniques.
- **HelpBuy** — an expansion of finance and leasing programs previously open only to bulk buyers of Personal System/2s. IBM will now offer buyers of even one machine the ability to get financing from IBM Credit Corp. Credit approval turnaround time of 24 hours via an 800 telephone number will be offered.
- **HelpCenter** — billed as a clearinghouse for all questions related to IBM's personal systems and OS/2 operating system, the Houston-based HelpCenter will feature toll-free support from 9 a.m. to 5 p.m., five days a week. While it is being touted more as a safety net for technical questions, Larry Deaton, IBM's director of personal systems services and customer support, said the IBM staff at the center will have electronic and telephone ties to such laboratories as those in Boca Raton, Fla., and Raleigh, N.C. No customer with technical problems will be turned away, he said.

The newly restructured Personal Systems Division of the Armonk, N.Y.-based giant is faced with the task of bolstering a PC market share eroded by clone makers able to get by on much lower margins than IBM. Service and support are being targeted as a major differentiator, observers said.

Midwest trial planned for SMDS, frame-relay offering

BY ELLIS BOOKER
CW STAFF

DETROIT — Two high-speed, wide-area data networking schemes that have been vying for the hearts and minds of users will be tested together here during the coming months.

Chicago-based Ameritech Corp. said last week that it will conduct Switched Multimegabit Data Service (SMDS) and frame-relay technical trials with several Detroit-based businesses.

Participating in the SMDS technical trial will be Ford Motor Co., Blue Cross/Blue Shield of Michigan and Merit Network, Inc. Frame relay will be tested by Michigan National Corp., a bank holding company, and other firms to be added in the second quarter, Ameritech said.

SMDS is a switched technology for public networks offering speeds of 1.2M to 34M bit/sec. Frame relay, which offers speeds of 56K to 1.5M bit/sec., is generally associated with virtual private networks because it establishes permanent virtual connections. The two technologies will be tried by several Detroit-based companies, Ameritech said.

Significantly, Ameritech plans to use a common cell-based switching platform for both trials. Industry sources speculated that Ameritech will use the AT&T BNS-2000, an AT&T SMDS cell-relay switch that includes frame-relay access.

Ameritech executives also clearly wanted to avoid the impression that the Detroit tests were a horse race between the two services.

"We view [them] as complementary because each meets specific needs for different businesses," said David Friedman, vice president and general manager of product development at Ameritech's Bell companies. Ameritech is the parent of Bell companies in Illinois, Indiana, Michigan, Ohio and Wisconsin.

According to Dataquest, Inc. figures, SMDS revenue, excluding the cost of dedicated access lines, will be only $150,000 this year but will grow to $4 million by 1994. By comparison, frame relay will have service revenue of $40 million this year, growing to $650 million by 1996.

APPN blueprint recasts host as server

BY JOANIE M. WEXLER
CW STAFF

WHITE PLAINS, N.Y. — IBM plans to wrap up its Advanced Peer-to-Peer Networking (APPN) strategy later this month, unveiling functions that could boost the mainframe into its prophesied high-end data server role, IBM spokesmen confirmed last week.

The vendor said it is also set to separate the mainframe from its subarea routing and data communications control functions. This would allow users to move from hierarchical Systems Network Architecture (SNA) networks to "flat" APPN environments in a way that greatly eases the migration effort and the administration of SNA/APPN networks.

The IBM SNA-to-APPN migration approach, expected to result in platformwide APPN networks by spring 1993, will allow the mainframe "to become the server that everyone wants it to be," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C. Dzubeck said he has been briefed in detail on IBM's APPN plans.

APPN is IBM's scheme for allowing devices to communicate directly with each other rather than having to first pass data up through a host. APPN is being phased in to migrate hierarchical SNA networks to a peer-oriented environment that can support local-area network internetworking requirements.

Shipping times to come

IBM said it will provide ship dates for APPN on mainframes and front-end processors in this month's announcement. The company declined last week to comment on specific availability schedules, though Dzubeck said staged releases will begin "in a matter of months," and all APPN shipments are slated to be completed by spring 1993. Network management capabilities for APPN networks will be part of the announcement, he said.

APPN software is currently available for IBM midrange Application System/400, 3174 Cluster Controller and Personal System/2 platforms.

IBM also confirmed that it will make available this month its APPN Network Node software for licensing. The Network Node performs peer-to-peer routing and control functions in an APPN network. Licensing the code will allow LAN vendors to integrate IBM environments into their routing schemes. Network Node licensees will be named at the announcement, Dzubeck said.

Node with personality

New versions of the now tightly coupled VTAM and Network Control Program (NCP) will emerge in the form of a composite VTAM/NCP Network Node with a "split personality," said a spokesman for IBM's VTAM product area. The new VTAM/NCP will perform APPN-to-subarea translation and vice versa, he said, allowing SNA and APPN environments to coexist peacefully.

This allows the customer "to decide what to do when, which has not been the case with IBM in the past," Dzubeck said.

VTAM is an IBM mainframe subsystem that handles application access and routing within the network. NCP is software that runs in a communications controller to control the data communications environment. The IBM spokesman said existing IBM 3270 mainframe applications will not have to change at all to accommodate the new APPN-oriented VTAM/NCP.

"THE TASK IS TO INTEGRATE THE OLD AND THE NEW."
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CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

Users cool to pricey portables

BY MICHAEL FITZGERALD
CW STAFF

NEW YORK — To hear vendors tell it, battery-powered notebooks with color screens represent the second coming of sliced bread. But last week, as three vendors began shipping color notebooks (see story at right), many microcomputer managers checked their enthusiasm because of the high cost of color.

"We don't want to pay the premium for [color]," said Michael Jones, vice president of information systems at LaSalle Partners Ltd. in Chicago.

"Color — at the right cost — is important to us. Right now I could get four cheap [monochrome] ones [for each of four sites], instead of buying one expensive [color] one and carrying it around," said Dean Muller, director of software engineering and development support at Whirlpool Corp. in Benton Harbor, Mich.

"We'll definitely look at color for some of our divisions, but we wouldn't buy them for, say, all the salespeople," said a systems analyst at a major food company. She said the company might assign color notebooks to account managers.

Mainstream thinking

These users seemed in the mainstream. A recent survey by Venture Development Corp. in Natick, Mass., showed 87.5% of those surveyed want more CPU performance in their next portable, while only 30.3% rated color important.

Analysts said color notebooks may need time to stabilize, as well. For example, a Leading Edge Products, Inc. booth staffer at the Lap & Palmtop Expo here last week said the company was not displaying its color notebook because the prototype was not stable enough to make the trip.

However, according to Richard Zwetchkenbaum, senior analyst at International Data Corp. in Framingham, Mass., stability issues — which can be corrected over time — will not be a significant stumbling block. However, price will be an obstacle, even for those already using color portables.

"We've had a few inquiries about color notebooks, but with budget crunches, they're just not sufficiently useful to pay out that extra money," agreed Marvin A. Moolenaar in I/S Planning & Client Services at Northern Indiana Public Service Co. (NIPSCO). NIPSCO currently counts one Toshiba America Information Systems, Inc. luggable with an active-matrix screen among its portables.

Moolenaar said NIPSCO will look at the new products, but for now, when employees do need color "they can almost get by with plugging into an external monitor."

"Color is an extremely important tool for what we do here," said J. Briscoe Stephens, data and information systems manager at NASA's Earth Science and Applications division. Stephens' group will buy a dozen color portables from AST Research, Inc.

Color portables could also find a home as desktop replacements.

"In lieu of buying a 486 desktop, for instance, we might buy a color portable," said Leonard Steinbach, information center manager at SUNY Health Science Center at Brooklyn in Brooklyn, N.Y.

Hands-on color

Color in the battery-powered notebook arena became something users could touch as well as see last week, as NEC Technologies, Inc., Dell Computer Corp. and AST Research, Inc. all started shipping products.

- NEC's UltraLite SL/25C uses Intel Corp.'s 25-MHz SL chip, weighs 7½ pounds, has 2M bytes of random-access memory, an 80M-byte hard drive and features a 9½-in. thin-film transistor active-matrix screen. Pricing on the box, which NEC claims has 1½ hours of battery life, is $6,000.
- Dell's 325NC, also based on Intel's 25-MHz SL chip, has a 9¼-in. passive-matrix screen, weighs 6.9 pounds, has 4M bytes of RAM and a 60M-byte hard drive. It costs $3,999.
- AST's Premium Exec 386SX/25C, based on Advanced Micro Devices, Inc.'s 25-MHz 386SXL, comes with a 60M-byte hard drive and costs $3,995. A similar color passive-matrix model with an 80M-byte drive and 4M bytes of RAM is $4,295. AST had announced the machines at price points that are $1,000 higher.

MICHAEL FITZGERALD

Novell reassures NetWare faithful on 2.X survival

BY JIM NASH
CW STAFF

OREM, Utah — Novell, Inc. last week offered a vague outline for the future of NetWare 2.X, backing away from earlier statements that it would not further enhance its mainstay network operating system. A number of 2.X customers welcomed the news, particularly small- to medium-size users who do not yet need to migrate to 32-bit NetWare 3.11.

A Novell spokesman said 2.X's core software will likely remain unchanged, but work is planned for additional services and management links to Version 3.X.

A Novell spokeswoman last month told *Computerworld* that the company planned to discontinue Version 2.2 development but would continue to sell and support the software. The Novell spokesman denied the company ever intended to sidetrack NetWare 2.X, claiming its statements were misinterpreted.

Ladd Timpson, product line manager for workgroup network operating systems at Novell, said the firm intends to develop better backup, print and client services for Version 2.2. For example, Timpson said Novell is developing client services for 2.2 running under Microsoft Corp.'s Windows 3.1, which is due out next month. He declined to be more specific.

Several information systems managers of smaller networks said they would continue using their NetWare 2.15 and 2.2 software until their networking needs justified buying the more expensive and sophisticated NetWare 3.X line. "My opinion is, 2.2 is perfect for small networks," said Peter Farrell, a special projects analyst at Woolworth Corp. in New York. When his four small networks require more networking features, Farrell said, he will upgrade to Version 3.11 rather than "jump off the Big Red bandwagon."

"We haven't paid a lot of attention to" the rumors, said Liz Lane, a support supervisor at Bethesda, Md.-based Congressional Information Services, Inc. "Our installation is pretty stable. As long as we can keep 2.15 running smoothly, we're going to keep it," Lane said.

IS managers at larger companies with both NetWare 2.X and 3.X said they would also stick with Novell rather than shop around for other network operating systems, such as Artisoft, Inc.'s low-end LANtastic and Banyan Systems, Inc.'s Vines.

David Bonnar, a consultant at Ernst & Young in Fresno, Calif., said he thinks Novell floated a trial balloon to see how important Version 2.X is to users. Bonnar, who routinely evaluates customer networking needs, said there may have been a strong backlash to the idea. Many value-added resellers that have just finished installing the 1-year-old NetWare 2.2 product may have reacted angrily to the prospect of telling customers they had a dead-end system, Bonnar said.

NetWare 2.0 made roughly $190 million in sales in fiscal 1991, compared with $300 million for 3.X, according to Novell. However, NetWare 2.X still outsells Version 3.X about 2-to-1 on a unit basis, the company said.

Senior editor Joanie M. Wexler contributed to this report.

GTE embraces client/server to speed user access to data

CONTINUED FROM PAGE 1

second (MIPS). The mainframes provide all customer-service data through IBM's IMS hierarchical database.

Prompting the move to client/server was GTE's need to combine the IMS data with information located on other systems, such as Digital Equipment Corp. VAXs and an aging third-party Honeywell, Inc. mainframe.

GTE was also looking to avoid multiple machine types and operating systems. "We have every conceivable kind of minicomputer. . . . We decided that we wanted to be rid of proprietary operating systems, and to move toward Unix," Hanna said.

One result is that GTE's Mechanized Assigned Record Keeping facilities management application will be rewritten to run on the HP servers. The database currently runs on the Honeywell CPU, which will be phased out, Hanna said.

However, IBM mainframes' IMS database will continue to support two key applications: an order-entry system and a customer-profile application. In the future, both data sets will be accessed from the same HP workstations, Hanna said. "Intermediate" HP servers will gather that data from the mainframes.

Users will view data through various "windows" on their HP workstations but will not be able to tell which data source they are using, Hanna noted.

Re-engineering top job

The first priority of GTE Telephone's multiyear migration to client/server systems is to re-engineer the mainstay Customer Marketing and Service System, which is now IBM mainframe-based.

The first working version of the Unix-based replacement system is being developed at GTE Data Services, Inc., an information technology subsidiary in Tampa, Fla., and should be deployed by year's end. It will be phased into all of GTE's 52 customer service centers — which take orders for phone service and report service outages — over several years, Hanna said.

Of the $100 million total that GTE envisions spending, $40 million will go toward thousands of HP/Apollo workstations, mostly HP 9000 Model 425 E models and newer Model 700 models. GTE will also have to acquire hundreds of HP Unix servers to act as "intermediate" servers capable of gathering data from various sources, including the IBM mainframes. The company has not yet selected a Unix database vendor.

Working with a single vendor eliminates the concern that multiple vendors would engage in "finger pointing" when problems crop up in the complex project, noted Jim Sturges, GTE Telephone's director of contracts and standards.

"Frankly, we were nervous about taking our major support systems, which are our livelihood, and moving the architecture this way," Sturges said. "We were looking for one vendor to get this paradigm-shift done."

Hundreds of GTE Telephone's information technology staff members will act as systems integrators for the project, working closely with HP engineers. A core development team of 50 GTE programmers and 10 HP engineers has already begun work on the project. They will also create training and systems administration plans that will be used after the systems are installed.

During the course of the project, it will take 300 to 400 people — about a quarter of them outside contractors — to get GTE Telephone's re-engineering job done, the company estimated.

HP springs shipment of SNA links for IBM gear

BY ELISABETH HORWITT
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. last week moved to get its IBM connectivity house in order, announcing the rollout of a consistent set of Systems Network Architecture (SNA) protocols across all its workstations, midrange systems and servers.

HP's SNAplus client/server architecture reportedly allows a mixture of HP systems on an Ethernet local-area network to access a variety of IBM SNA environments through a single server and communications link. Previously, HP provided different SNA software and features on different systems, so different system families required separate links to each SNA environment, HP said.

A consistent, server-based SNA connection for HP systems addresses a growing body of resource tracking, finite scheduling and quality-control applications, said Julie Fraser, a senior industry analyst at Advanced Manufacturing Research, Inc. in Cambridge, Mass. Such "manufacturing execution systems" typically integrate shop-floor workstations, many of which are HP's, with back-office hosts that are generally IBM mainframes, according to Fraser.

The ability to link multiple HP systems via a single SNA gateway would potentially lower the massive overhead of running SNA on multiple HP 3000 and 9000 hosts, said William G. Phile, director of computing services at Hercules, Inc.'s corporate data center.

The Wilmington, Del.-based manufacturer currently uses IBM's LU6.2 protocol to give users an integrated view of in-process inventory on HP hosts at the plants and finished inventory on IBM hosts.

Initial SNAplus products, available now, include SNAplus Link, the basic SNA software and card; client/server software that supports IBM 3270 and 3278 terminal emulation; LU6.2 peer-to-peer connections; and IBM's High Level Language Application Programming Interface for automating data transfer and host log-on procedures, HP said.

Initial systems supported by the SNAplus products include the HP/Apollo 9000 Series 400 and 700 workstations, HP 9000 Series 300 workstations and Series 800 servers. SNAplus systems can send alerts and alarms to HP's OpenView, IBM's NetView and Simple Network Mangement Protocol-compliant network management systems.

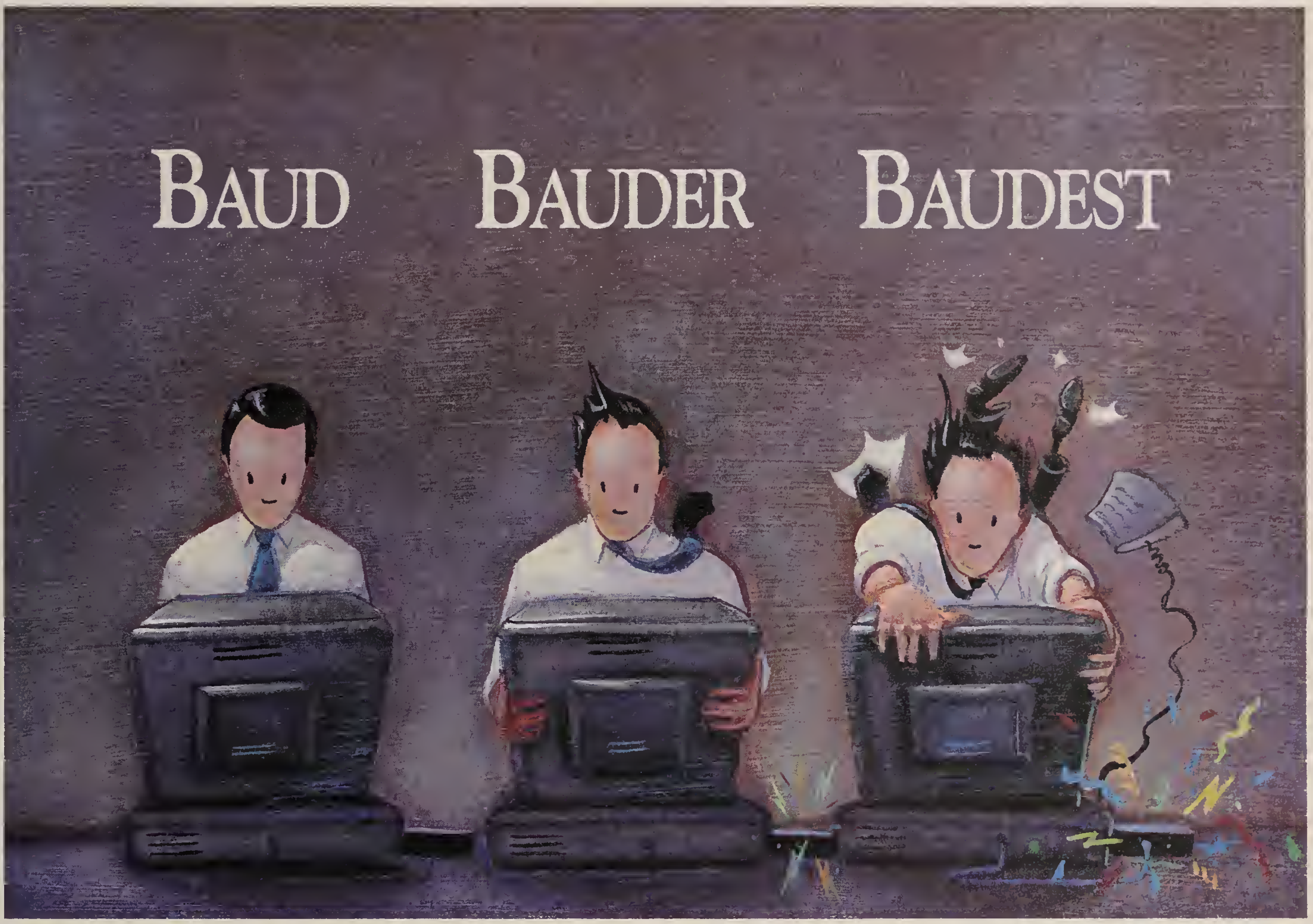
SNAppy plans

HP intends to extend support for IBM protocols across its entire systems family. HP's strategic plan includes the following:

- SNAplus-based support of IBM's Advanced Peer-to-Peer Networking nonhierarchical communications protocols will eventually replace SNA, according to IBM.
- SNAplus support of IBM's 5250, the terminal protocol for IBM Application System/400s, is expected to be released by early next year.

Phase 2 of HP's SNAplus rollout, expected in the fourth quarter, will provide Token Ring connectivity between SNAplus servers and IBM systems, as well as IBM's Qualified Link Level Control protocol for running SNA over X.25 packet-switched networks.

During the first half of next year, HP will extend SNAplus to other HP systems, including Apollo Domain workstations and HP 3000 Series 900 MPE/iX systems.



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NEWS SHORTS

Novell responds to suit

Novell, Inc. has asked for dismissal of a patent-infringement suit filed in December 1991 that alleges the Provo, Utah-based networking giant violated an existing patent for file server technology. The American Academy of Science in Independence, Mo., claims Novell and customer BankAmerica Corp. stole technology allegedly invented by academy founder Roger Billings. A minimum of $672 million in penalties and royalties is being sought. Novell is asking for Billings' patents to be invalidated and for payment of unspecified costs and damages. A tentative court date has been set for January 1993.

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UK order charges DEC sales

National Power, the UK's largest electricity generator, has purchased more than $50 million worth of systems and services from Digital Equipment Corp. in Maynard, Mass. National Power will use the DEC products to form the backbone of a nationwide computer network that integrates multivendor systems, including an Amdahl Corp. mainframe and MS-DOS-based personal computers, via a DECnet Systems Network Architecture gateway. During the next two years, National Power will use more than 100 DEC VAX computers.

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Relieving Token Rings of the jitters

An alternative proposal for supporting 16M bit/sec. Token Ring over unshielded twisted-pair wire was presented to the IEEE 802.5 Token Ring committee last week by smart-hub makers Star-Tek, Inc., Bytex Corp., Proteon, Inc. and Ungermann-Bass, Inc. The proposal requires data signals to be retimed on each concentrator port to maximize the distance of 16M bit/sec. networking over the low-grade medium without jitter. A competing proposal was jointly submitted by hub maker Synoptics Communications, Inc. and IBM.

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DEC, Fluent target multimedia

DEC and Fluent, Inc. agreed to develop a family of software and hardware products for integrating full-motion digital video and audio into networking products and desktop applications. The multimedia products will be based on Fluent's Fluency products, and DEC will market and service an add-in board set for real-time capture, compression and overlay of still images and full-motion digital video segments with synchronized audio capabilities.

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Short takes

The **International Network of Women in Technology** is a fledgling organization that plans to use high-tech tools to help women in business collaborate on their careers. Executive Director Carolyn Leighton can be reached at (818) 990-1987. . . . **Cincom Systems Inc.** will port its CONTROL: Manufacturing (C:M) application software to Unix computers made by **Hewlett-Packard Co.** and **DEC**. Cincom is moving to run C:M against a variety of relational databases, beginning with DEC's RdB in the fourth quarter. . . . **Silicon Graphics, Inc.** plans to announce today that **Du Pont Pixel Systems Ltd., IBM, Nth Graphics Ltd.** and **SHOgraphics, Inc.** are licensing Silicon Graphics' three-dimensional graphics library, Open GL. IBM is also joining Silicon Graphics' new Architecture Review Board. . . . **Central Point Software, Inc.** has acquired Windows software vendor **Eikon Systems, Inc.**, which will ship Version 2.2 of its Scrapbook+ package this month. . . . **NCR Corp.** has pulled **AT&T**'s Safari notebook group into its fold as the NCR Notebook Business Unit. . . . **Beyond, Inc.**, an electronic-mail and workgroup developer, will support the Vendor Independent Messaging interface announced by **Apple Computer, Inc., Novell, Borland International, Inc.** and **Lotus Development Corp.** . . . William Y. O'Connor will succeed Dewaine L. Osman as head of **Ascom Timeplex, Inc.**, a global networking company. Osman reportedly will continue as an adviser to Ascom Timeplex's board of directors. . . . **Rambus, Inc.** has reached long-term licensing and integrated circuit implementation agreements with **Fujitsu Ltd., NEC Corp.** and **Toshiba Corp.** Rambus said the deal could lead to 500M byte/sec. dynamic random-access memory transfer rates — more than 10 times today's rates.

Mips move could weaken ACE

CONTINUED FROM PAGE 1

duced instruction set computing (RISC) chips and Intel Corp.'s 80386 and I486 architectures.

Houston-based Compaq, also a member of ACE, recently parted ways with Silicon Graphics when the two amicably dissolved a joint development project. A Compaq spokesman last week said the company had no comment as yet.

More than 250 software and systems vendors have signed up to produce ACE products, but the truly significant boost for ACE will come when Microsoft ports its Windows New Technology operating system to the Mips platform, as well as to Intel's.

Mips Chief Executive Officer Robert Miller stressed that both vendors will market systems that meet ACE's Advanced RISC Computing specifications.

Once the deal, valued at more than $400 million, is completed in June, the newly named Mips Technologies, Inc. will become a subsidiary of Silicon Graphics, with Miller staying on as its top official.

Miller and Silicon Graphics President Edward McCracken emphasized that Mips will continue to produce a "vendor-neutral RISC architecture" and offer "equal footing" to any company interested in licensing it.

From the user point of view, Silicon Graphics' acquisition of Mips for an undisclosed sum should be "nothing but positive," Batten said.

Silicon Graphics "will have control over the main processor in their systems now, and that can't do anything but help them," the user noted. "One of the things that was handicapping them was having to rely on other people to keep up with them."

Delays in development of Mips' R4000 RISC chip, coupled with persistent rumors of morale problems and an exodus of talented developers, had darkened the future of the Sunnyvale, Calif.-based systems and chip vendor, analysts agreed.

The merger "sounds like something that makes a lot of sense and hopefully will be real important in the long run," said Rudy Leeman, director of computer simulation at Sea, Inc. in Columbus, Ohio. The firm uses Silicon Graphics workstations for computer simulation used in courtroom presentations.

Yet the news produced an immediate drop in Silicon Graphics' stock price last week, as financial analysts took a dim view of the bottom-line impact on shareholders and the apparent haste involved in striking the deal.

"This was a bit of a wake-up call for Wall Street that while SGI is a good company, they're operating in a very competitive market," Herwick noted.

Both companies have worked closely together for years in chip development projects. "It's not like two strangers getting together," said Jeffry Canin, an analyst at Montgomery Securities in San Francisco.

Rattled Schwab moves IS from Bay area quake zone

CONTINUED FROM PAGE 1

large corporate IS departments away from pricey metropolitan areas (see chart).

"There is an enormous potential for savings in such a move. The difference in costs between a high-cost city like San Francisco and a low-cost city like Phoenix can be 50%," said Peter Balbus, director of strategic planning at Compass America, Inc., a capacity planning consultancy in Herndon, Va. With the emergence of high-speed data links, "it's no longer necessary for the data center to be located under the people it serves," he added.

Barmann said uninterruptible service, not fiscal belt-tightening, sparked the move, but he acknowledged that opportunities for cost savings will be plentiful.

In addition, a major move is seen as a good time for both technological updating and housecleaning. "Data centers tend to be overstaffed in most critical areas," Balbus said, adding that sometimes a move of this type is required to spur senior managers to aggressively automate technologies.

In Phoenix, the basic components that link traders at approximately 170 Schwab offices throughout the country will remain the same: a leased-line Systems Network Architecture-based point-to-point analog network connecting a Hitachi Data Systems Corp. Model 420 mainframe with Quotron Corp. terminals. However, there will be a changeover to more automated operations such as system-managed storage and remote network system management.

"We'd like to take the labor component out of running the system," Barmann said.

Personnel costs may also dip drastically. The cost of a skilled IS staff member runs $55,000 to $70,000 a year in metropolitan areas of more than 2 million, but it dips to the $25,000 to $45,000 range in areas of less than a half-million people, Balbus said.

About 50 people will man the Phoenix center, which will be "heavy on machinery and light on people," Barmann noted.

Barmann said it is still too early to determine how many of the 50 to 100 current IS staffers will relocate to Phoenix. Those who do not will be absorbed into other parts of the growing firm. "No jobs will be lost," Barmann said. "In fact, we may end up gaining positions."

Barmann said the firm never considered outsourcing because "we're too proud of the level of service we offer our customers to entrust it to outsiders."

The data center relocation comes as the discount brokerage house continues to blossom — Schwab's revenue grew 47% to $570 million last year, and its client assets grew 55% to $48 billion.

The relocation is part of Schwab's effort to disperse its technological services. In 1988, it opened a phone center in Indianapolis. Another calling center opened last year in Denver.

No city slickers

Recent data center relocations

AT&T consolidating 20+ data centers nationwide into two logical data centers in Alpharetta, Ga., and Orlando, Fla.

Citibank relocated credit card operations in New York to Hagerstown, Md., Las Vegas and Sioux Falls, S.D.

GE consolidating 29 existing data centers to Cincinnati.

J. P. Morgan relocated data center in New York to Wilmington, Del.

Manufacturers Hanover consolidated data centers in New York to Wilmington, Del.

National Liberty Insurance consolidated data center in Philadelphia to Louisville, Ky.

Pacific Gas & Electric consolidated data centers in San Francisco to Fairfield, Calif.

Source: COMPASS America, Inc.

CW Chart: Janell Genovese

IBM
SAS System for OS/2
File Options Windows Help
MARKETING NOTES
File Edit View Globals Help
WORK.GSEG.GCHART1
Locals Globals Help
SALES BY REGION
MARKETING INFORMATION SYSTEM
ANALYSIS
FORECASTING
HOST CONNECT
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NORTH CENTRAL 3,810 $55,200.00 3.8
NORTHEAST 4,863 $121,725.00 4.8

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Multimedia show reveals technology's crawl

BY JAMES DALY
CW STAFF

SAN FRANCISCO — Dozens of vendors at the seventh International Conference & Exposition on Multimedia and CD-ROM here last week offered promising, if often incremental, advances designed to nurture the fledgling multimedia market.

Multimedia providers worked hard to link the budding technology to office productivity gains, a connection that has so far proved elusive and that represents a serious marketing challenge. Although multimedia promises to bring live-motion video, sound and animation to the personal computer, thus far its only real corporate foothold has been in training.

"With multimedia, we are still not there yet; we still don't have that critical mass," Microsoft Corp. Chairman Bill Gates acknowledged during the show.

However, Gates predicted that the technology will be mature by the end of the decade, propelled forward by programs such as book players and computerized magazines that are inexpensive and easy to use. He also said future versions of the Windows graphical environment will have multimedia built into them. Multimedia extensions to Windows are available today.

IBM was a star of the show with the arrival of its first desktop multimedia machine, the Ultimedia Model M57 SLC. The machine, which was announced at Comdex/Fall '91 in October, is being shipped several weeks ahead of schedule. It will sell for $5,995 and run OS/2 Version 2.0 for multimedia and Windows 3.0 with multimedia extensions.

Apple Computer, Inc. said it will integrate Eastman Kodak Co.'s Photo CD technology into future versions of its Quicktime system software extension.

The Photo CD system would give Macintosh users direct access to images stored on compact disc for use in their applications. It should be available by year's end, Kodak officials said.

Other announcements at the three-day show included the following:

- Cambridge, Mass.-based Lotus Development Corp. showed Multimedia Smarthelp, which enables operators to call up animated videos on PC screens to learn how to use Lotus' 1-2-3 spreadsheet [CW, March 9].
- Sony Corp. exhibited a handheld personal information manager that runs MS-DOS and offers a compact disc/read-only memory player (CD-ROM), LCD panel, speaker, keyboard and cursor pad. The unit, which measures 7- by 2- by 6 in., also plays audio CDs. The machine will list for less than $1,000 when it ships later this year, Sony said.

Synoptics adds to network security

BY JOANIE M. WEXLER
CW STAFF

SANTA CLARA, Calif. — The latest security wrinkle from a wiring hub vendor came last week from Synoptics Communications, Inc. The move signals a growing initiative by vendors of varying equipment types to bundle security features into products such as hubs, routers and local-area network servers.

Because these devices sit at varying points on a network, however, just how companies should implement consistent security measures on their corporate LAN internetworks is in question.

One Synoptics shop acknowledged that there "are a bunch of places that could be appropriate" for security. Jonathan Nareff, vice president of information resources at Barclay's Business Credit, Inc. in Glastonbury, Conn., said he currently banks on the security in his network operating system. "I hadn't thought about putting it in a hub," he said.

Synoptics said it has folded $25-per-port security features into a new 10Base-T host module — dubbed LattisSecure — for its high-end LattisNet System 3000 cabling center. The mechanism scrambles or removes data not targeted for a specific end station on broadcast-oriented Ethernet networks. If unauthorized users log on to the LAN, an alarm is sent to the central network management system.

The Synoptics move follows a similar $60-per-port rollout from competitor 3Com Corp. last month.

The Synoptics scheme is a good one, according to analysts. However, another potential "patchwork" issue for some organizations is that so far, Synoptics and other vendors are putting the security features on just one or two of their high-end devices and on one type of network (Ethernet) only. This results in islands of LANs that can be secured through the hub while others remain vulnerable.

Todd Dagres, director of communications strategy research at Boston-based consultancy The Yankee Group, pointed out that because hubs allow users to segment their LANs logically, "users can pick off segments most at risk" and begin their security migration there.

However, Nareff said, "Segmentation would not work very well in our area; we pass too much information back and forth."

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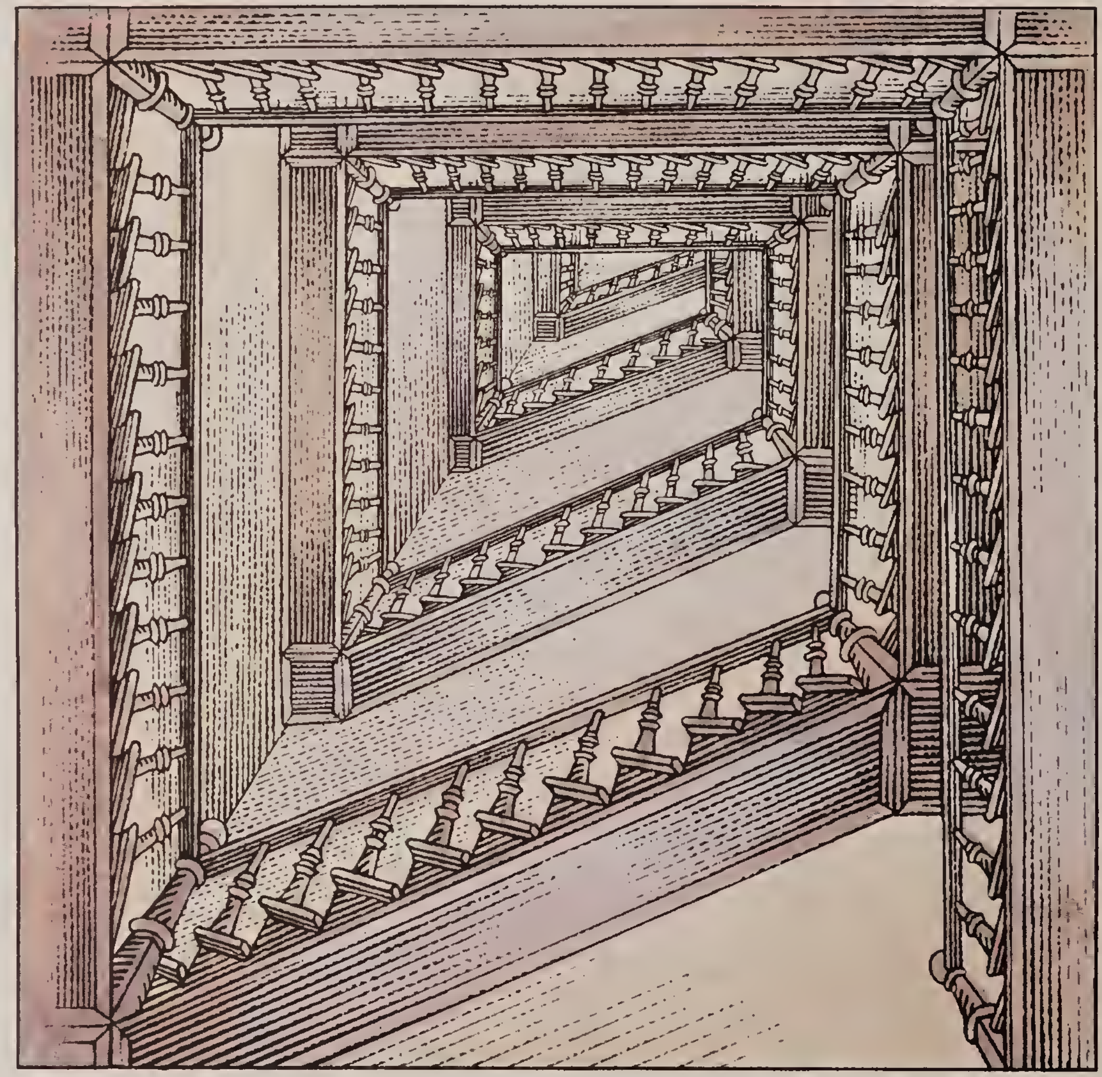
When it comes to enterprisewide connectivity, not all e-mail systems work quite the same way.

While a lot of LAN-based electronic messaging systems provide connectivity across a variety of computing platforms, many don't do a very good job of it. The fact is that connectivity with poor performance is like not having any connectivity at all.



Electronic mail is quickly becoming a mission-critical component of day-to-day operations for many businesses. Despite this, research indicates that about 90% of all Fortune 1000 corporations can't communicate across their disconnected e-mail systems[†].

This underscores how difficult it is to achieve quality connectivity in today's corporate environment. The reality is that LAN-based e-mail systems must be able to work in a robust fashion with an organization's existing LAN, minicomputer and mainframe systems.

What makes things even more complex is that technology is still in transition, so any connectivity decision you make today must also include an assessment of the future and how you plan to get your company there. Which means the pressure to architect an optimal long-term solution is extremely high.

If you're responsible for implementing and managing LAN-based systems, you should look beyond simple "checklist" connectivity and ask some very difficult questions. Questions like will the gateway enable you to leverage a messaging backbone to connect all of your dispersed LANs? Will the gateway support encapsulation to preserve rich data integrity? How tightly will the gateway be integrated with the e-mail system for directory synchronization and adminis-

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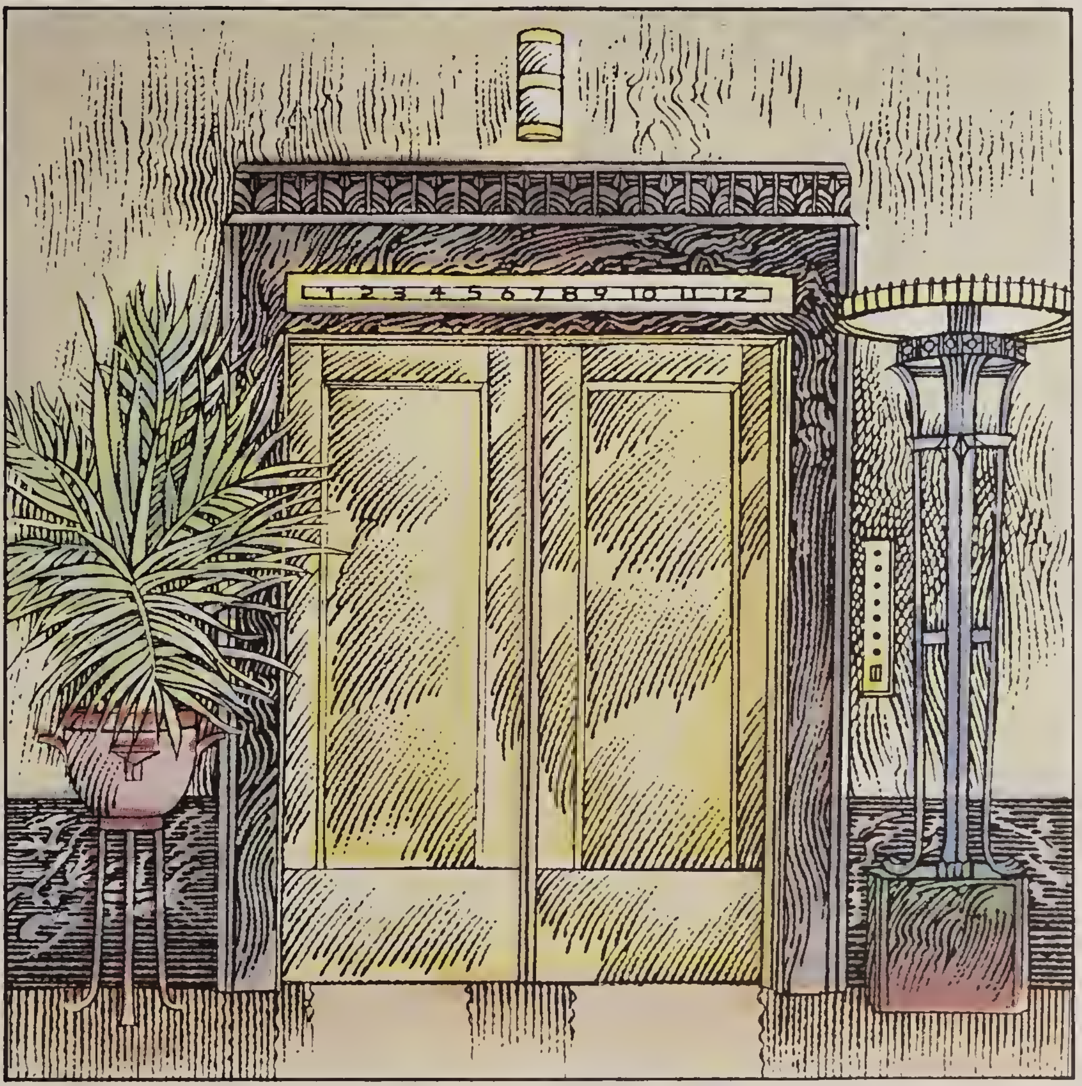
† Forrester Research 1991. *© 1992 Microsoft Corporation. All rights reserved. Printed in the U.S.A. In the 50 United States, call (800) 227-4679, Dept. X95. In Canada, call (800) 563-9048; outside the United States and Canada, call (206) 936-8661.*

tration? How easily can users address messages to recipients on foreign e-mail systems?

Quality of connectivity is the critical factor. Simply sending interpersonal messages through a maze of gateways is only a minimum requirement. Too often, gateways can limit the overall functionality of the e-mail system, when in practice they should be expanding it. E-mail has evolved into a complex system of post offices, MTAs and gateways that must all cooperate as one entity. And relying on multiple electronic mail vendors just adds to the complexity. Which is why the selection of a vendor supplying connectivity technology is as important as the technology itself.



A single-source vendor can provide technical support and accountability for your entire LAN-based e-mail system. And products which are designed and developed together will deliver higher quality connectivity.

Another point to keep in mind is that a single-source vendor is much more likely to make timely technological enhancements to gateways that parallel improvements made in their e-mail system. For example, if your e-mail system evolves to allow users to embed charts in their messages, your gateways should evolve so that messages can be sent without losing formatting or data.

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Cisco routers to cut need for supervision

Dial-on-demand capability taps into public-switched networks without dedicated line cost

BY JOANIE M. WEXLER
CW STAFF

MENLO PARK, Calif. — By the end of next month, Cisco Systems, Inc. routers will link local-area network traffic across public-switched networks without human intervention.

The "dial-on-demand" capability, announced last week as part of the vendor's imminent Release 9 of its routing software, will reportedly allow companies with LAN internetworks to leverage the economies of tapping into public-switched bandwidth as traffic needs dictate, rather than paying for dedicated lines.

Today, routers typically link LANs over wide areas via leased circuits. While routers can hook into public-switched network services via network access equipment — such as inverse multiplexers, modems and terminal adapters — a user or LAN administrator must manually dial the call and plug the router into the network device when the traffic is sent.

Similar dial-on-demand capabilities are expected this year from Cisco competitors Wellfleet Communications, Inc., Proteon, Inc. and others.

A European user who has been beta-testing the Cisco feature on eight of his 20 Cisco routers said it will allow him to link his campus LANs for the first time. The high cost of European leased lines currently precludes LAN links at the University of Neuchatel in Neuchatel, Switzerland, said Claude Wacker, network manager.

Wacker said he now plans to link his campuswide LANs via Basic Rate Interface Integrated Services Digital Network (ISDN). The Cisco router "establishes the connection when there is traffic and cuts it when traffic stops," Wacker said.

For the Cisco capability to work, its counterpart network access device must support the CCITT V.25 bis standard with open extensions added by Cisco and inverse multiplexer vendor Ascend Communications, Inc. in Alameda, Calif. The specifications are supported by "just about every synchronous modem on the market," said Larry Lang, Cisco's WAN product marketing engineer.

Awaiting V.25 support

The university is using V.25 bis-compliant ISDN terminal adapters from the Swiss Postal Telephone and Telegraph authority (PTT). Wacker said he is anxiously awaiting the PTT's support of the V.25 bis standard in its 2M bit/sec. Megacom switched service for linking to other European PTTs.

V.25 bis allows a router to tell the network access device where and when to send traffic and over what path. With this intelligence, the router can create new or alternate paths for redundancy or capitalize on transmitting at less expensive times of the day.

For example, U.S. and Japanese corporate branches might be open just two concurrent hours a day, rendering it inefficient for companies to pay for continuous open communications channels. Each site could store up electronic-mail messages, then pass all the traffic in that two-hour window, said Jay Duncanson, an Ascend cofounder.

Dialarama

The dial-on-demand capability will join other Cisco Release 9 features that will be available free to users on the Cisco maintenance plan at the end of next month. For users not on the plan, it costs $500 per router to upgrade to the new features, including the following:

- Translation between Token Ring and Synchronous Data Link Control traffic for blending the two IBM environments.
- Security barriers for protecting Apple Computer, Inc. AppleTalk network zones.
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JOANIE M. WEXLER

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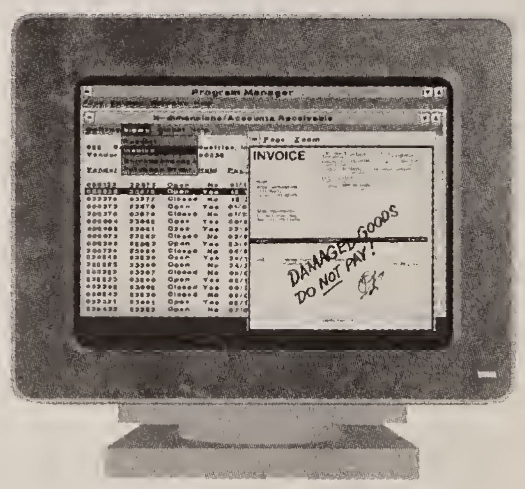

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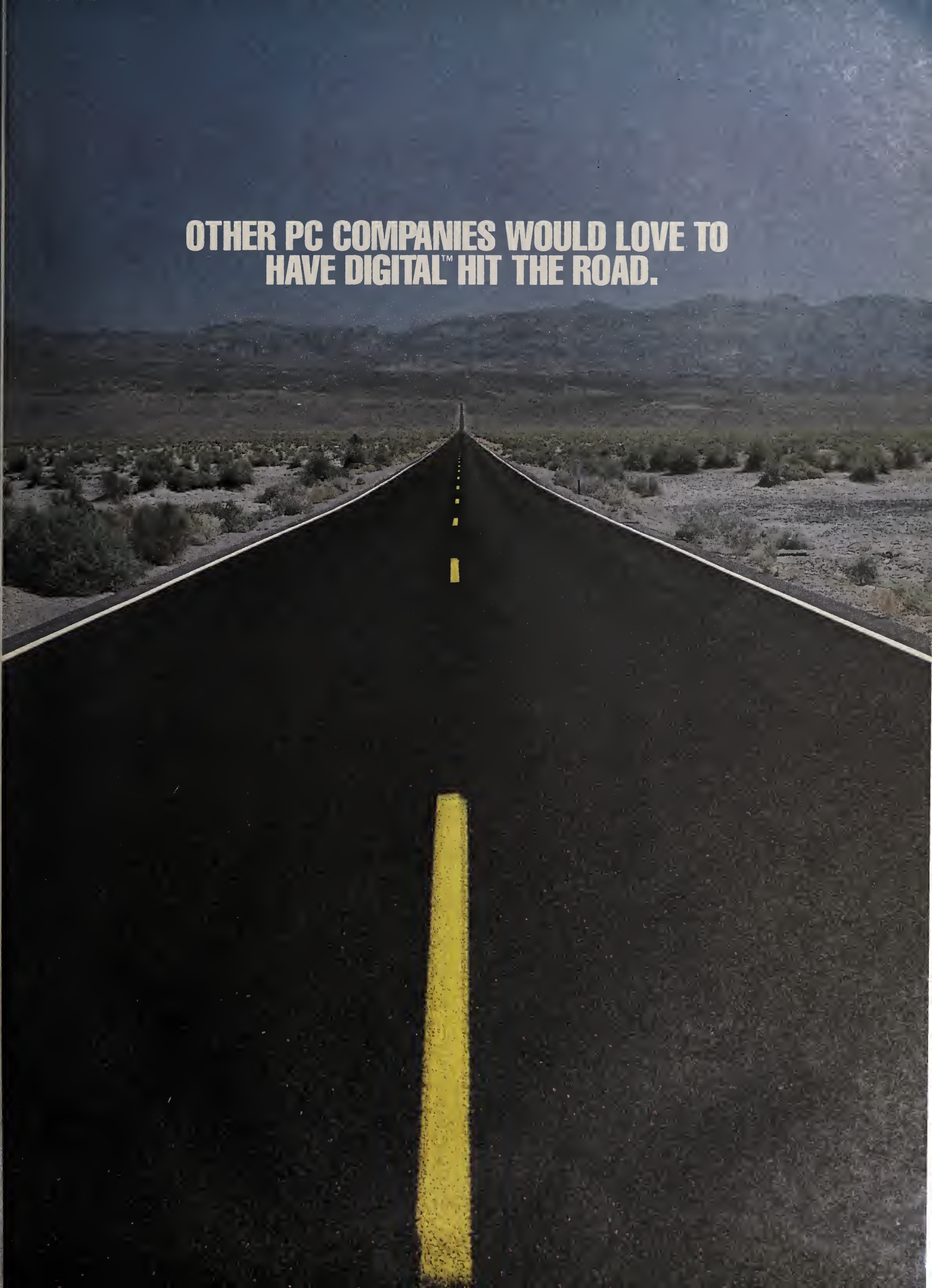
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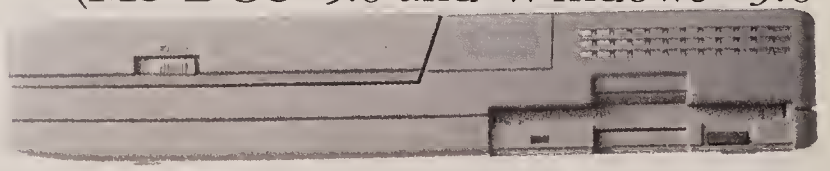

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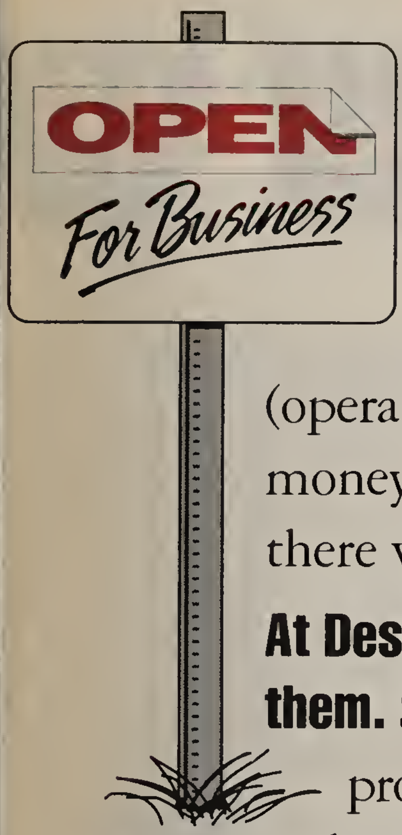

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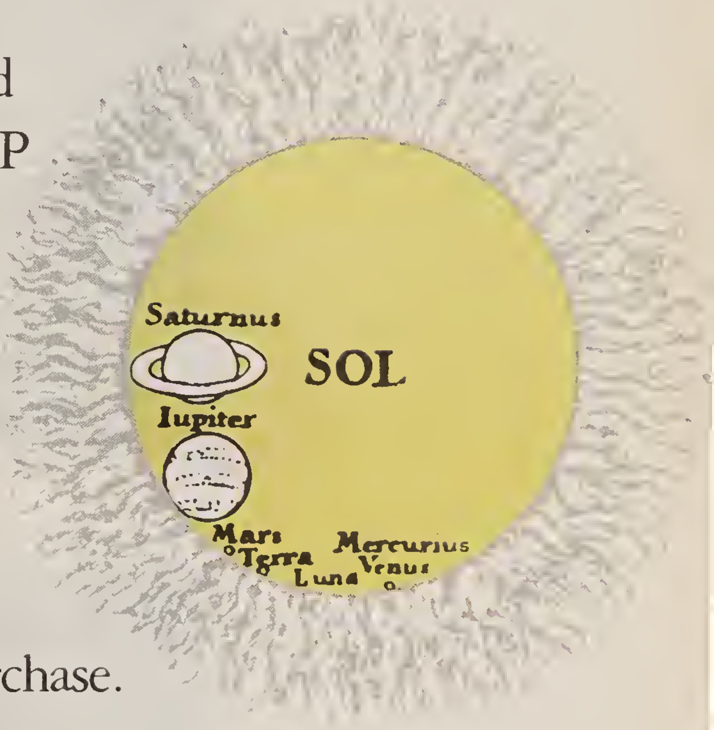

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☐ Order-entry
☐ Database (filing records)
☐ Financial Calculations
☐ Retail Store Management
☐ Desktop Publishing
☐ Education
☐ Design (CAD/CAM)
☐ Engineering
☐ Industrial Process Control
☐ Scientific Research
☐ Software Development
☐ E-Mail
☐ Other industry-specific applications (please specify)

How many people work in your group, department or small business?
☐ Less than 10 ☐ 10-20 ☐ 20-35 ☐ More

Is your operating system:
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☐ Realtime Modeling
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☐ Image Processing
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☐ A line to a host system in a remote location
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TECH TALK

Recording and networking

■ Philips Consumer Electronics B.V. has introduced a compact-disc recorder (CD-R) at $6,000, well below the price of previously available CD-R machines. CD-R is write-once technology, which means that data can be recorded once to a disc and read many times. Discs recorded on the machine are compatible with CD/read-only memory, CD-interactive, CD photo and other CD formats. In a related announcement, Meridian Data, Inc. has introduced software called Netscribe that makes it possible to use Philips' CD-R in a network. The two companies also said they signed a licensing agreement that will permit Philips to integrate Netscribe into future CD-R machines.

Super center

■ Intel Corp. has established the European Supercomputer Development Centre in Munich, Germany. Computer scientists at the new center will collaborate with European users and research laboratories to develop software that will support trillion floating-point operations per second computing. Intel has installed more than 50 supercomputers in Europe, according to Justin Rattner, director of technology at Intel's Supercomputer Systems Division.

Very graphic video

■ A new Video Graphics Array (VGA) chip allows personal computers to display 24-bit photorealistic images and improve Microsoft Corp.'s Windows graphics performance for the same price as ordinary VGA, according to Trident Microsystems, Inc., the chip's maker. A key feature of the chip is its local bus interface that allows it to communicate directly with Intel 80386 and I486 microprocessors. Production quantities of the chip will be available in the second quarter, according to the company.

Clustering workstations for power

Yale team's program harnesses groups of workstations for supercomputer-like power

BY MICHAEL ALEXANDER
CW STAFF

When workstations sit idle, as they probably do more often than not, unused computer cycles are being flushed down the drain, according to David Gelernter, a computer scientist at Yale University in New Haven, Conn.

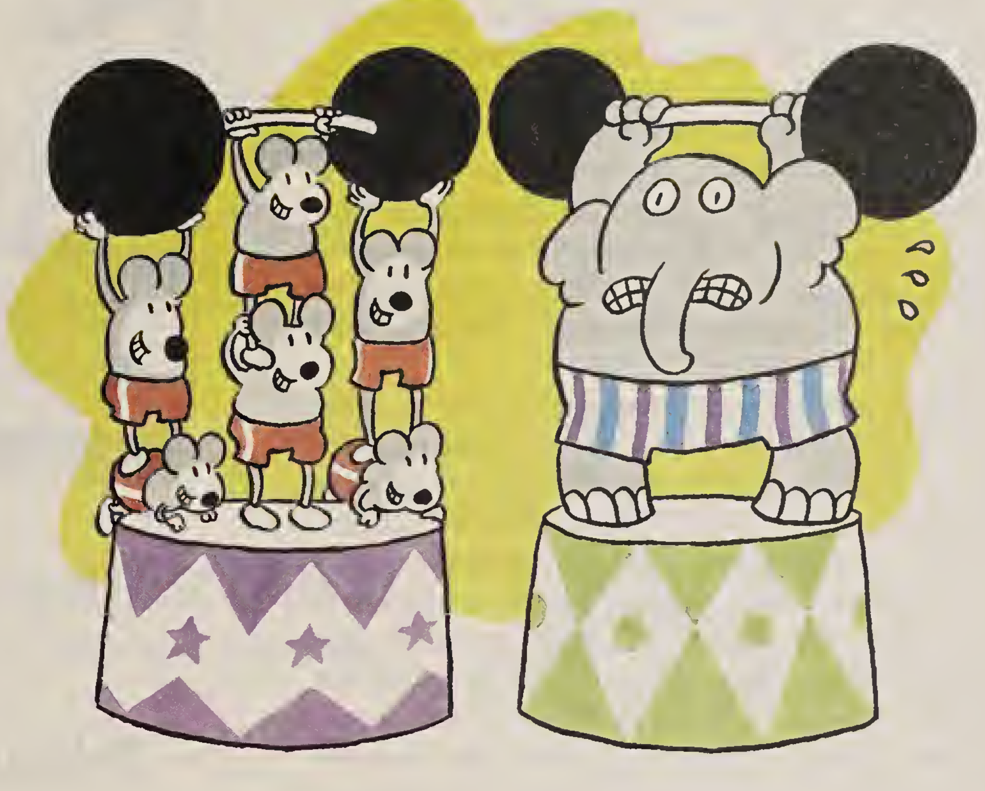
Gelernter has spent several years trying to find ways to put otherwise idle computer power to work on heavy-duty computational tasks. While still a graduate student, Gelernter wrote a programming language, called Linda, that made it possible to create programs for parallel processing computers. "The Linda program runs pretty much on any collection of computers — whether it's a separate box or loosely connected workstations," he said.

Now, Gelernter and a team of computer scientists at Yale are putting the finishing touches on an adaptation of Linda called Piranha Linda that will allow workstations on a network to divvy up a computational work load with supercomputer-like efficiency.

Linda has inspired several companies to develop their own parallel computing applications. Scientific Computing Associates (SCA) in New Haven owns the Linda trademark and markets an adaptation of the original Linda. Other companies include Intel Corp.'s Supercomputer Systems Division and Cogent, Inc. (both based in Beaverton, Ore.) and VXM in Boston.

Computer scientists have long realized that it may be possible to harness the power of clusters of workstations to perform supercomputer-size jobs.

There are at least three ways to use these workstation clusters, said Robert Grossman, director of the laboratory for advanced computing at the University of Illinois at Chicago.



David Brion

"You can use idle cycles — that is best understood; you can use clusters when the problem has data that can be naturally distributed over the cluster; and the third way is to break an algorithm into parts and put them on different machines," Grossman explained.

The lab at the University of Illinois has been experimenting with "distributed scalable computing," using a small cluster of Sun Microsystems, Inc. workstations. "Scalable" here means having the ability to add as many workstations as are needed to complete the job at hand.

Using the power of a platoon of workstations has drawbacks, however. The primary problem is that it often requires customized software, and that takes a lot of time and effort. "People claim to have the tools, but they have not met our needs," Grossman said. The laboratory uses two public-domain software programs: Condor, developed at the University of Wisconsin and p4, developed at Argonne National Laboratory in its clustering experiments.

"On the whole tools [to write parallel programs] are lousy," Gelernter agreed. "Linda is a high-level tool, machine-independent way to write these programs; most [programs] are not machine-independent and have a commitment to the way the machine hooks together shared memory systems, for example."

Also, workstation owners are often reluctant to allow their workstations to be used for computational duties when they would otherwise be idle, Grossman said. Some programs now under development promise to be sensitive to needs of users whose workstations may be so appropriated.

"One we use, as soon as you touch the keyboard, it swaps you out and checks back occasionally to see how long the machine has sat idle," he said.

Optical digitizer makes graphics automatic

BY MICHAEL ALEXANDER
CW STAFF

Computer scientists and engineers at the Multimedia Technology Laboratory at the Georgia Institute of Technology in Atlanta have developed a low-cost optical digitizer that can be used to automate the time-consuming job of creating graphics for animation, modeling and visualization.

The 3-D Optical Digitizer would enable scientists, industrial designers and others to generate images without having to use pen digitizers and other tools, said Michael Sinclair, co-director at the Multimedia Laboratory.

The Georgia Tech digitizer uses three video cameras to record information about the contour of an object as it is lighted and slowly rotated on a turntable. Proprietary electronics equipment converts the video input to the basic mathematical description that computers need to model complex objects.

"Once you get the basic description of the object, both its color and its form, the artist can do the electronic alterations to change the color and texture, make distortions or other changes," Sinclair said. "Designers can augment the system using readily available electronic sculpting tools to manipulate the object."

The 3-D Optical Digitizer has been successfully demonstrated as a prototype but would need further refinement for commercial application. Sinclair said the digitizer could be marketed for about $15,000. Systems now available cost more than $100,000, he said.

Gary Meek

3-D Optical Digitizer *depicts image of Multimedia Lab's Sinclair*

EDITORIAL

Whew!

Well, Michelangelo's birthday came and went, and the earth didn't stand still. In fact, the killer virus that generated more media attention than fusion in a bottle turned out to be a snoozer.

Was Michelangelo a white elephant or a near miss? No one knows how many PCs would have been affected if public awareness of the virus' danger hadn't been so high. But clearly the forecasts of as many as 1.5 million infections (estimates made, by the way, by experts who stood to profit from the hysteria) were off the mark. *Way* off.

Michelangelo mania swelled and took on a life of its own with incredible speed. Symantec reported that 50,000 people downloaded its antiviral patch from bulletin boards in the weeks preceeding the trigger date. *Computerworld*'s editorial offices were swamped with calls from reporters in the general media seeking a quick education in what viruses were all about. Software retailers reported lines of people around the store buying vaccines. Despite assurances from the more rational experts that Michelangelo endangered only a fraction of a percent of all PCs, the incident got blown way out of proportion.

So now everyone looks kind of silly. And the next hint of viral mania will likely be greeted by suspicion and apathy. That would be a mistake.

As big a whimper as it was, Michelangelo did some scary things. It got into shrink-wrapped software from at least a half-dozen vendors, including trusted names such as Intel. Users tend to trust that the software they buy at a store won't blow up their PCs, just as they believe bottles of aspirin won't contain rat poison.

Also, the virus did infect a lot of machines — at least several thousand. Were it not for the publicity, you can bet it would have hit a lot more.

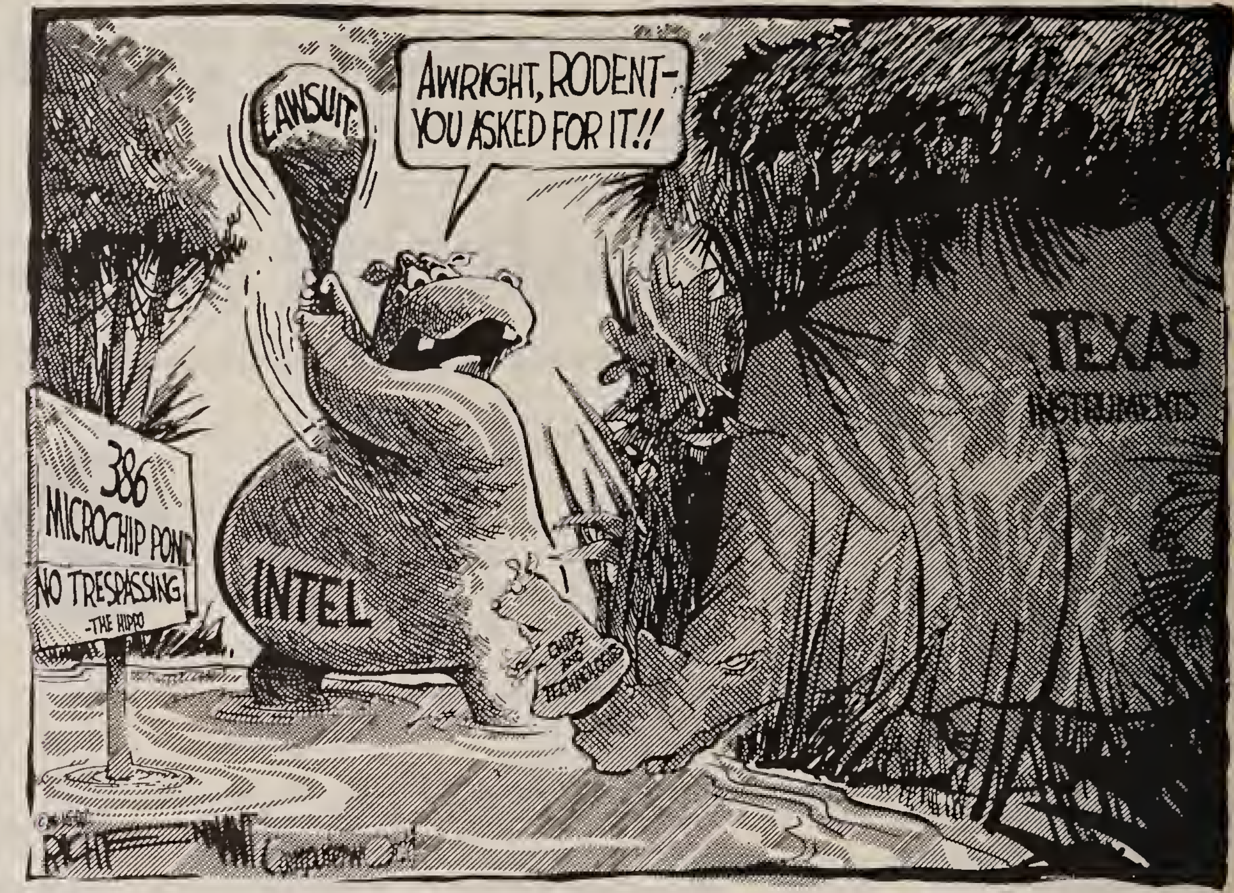
One thing Michelangelo made clear is that people shouldn't have to think about computer virus protection any more than they should worry about salmonella bacteria in their food. It's up to the industry to take action:

- Software vendors can agree to offer a standardized set of antiviral utilities as an installation option on their packages. That way, whenever users upgrade, they could automatically install the latest release of the vaccine.
- PC vendors can bundle antiviral software into the machines they sell. Some already do this, and more should pick up the ball.
- Hardware makers can build antivirus scanning routines into silicon, allowing PC vendors to include a vaccine chip right on the system board.

Whatever approach works, vendors should offer the solution at little or no additional cost to the customer. No one should have to pay extra for safe computing.

Paul Gillin

Paul Gillin, *Executive Editor*



LETTERS TO THE EDITOR

Mellon committed to outsourcing

"Mellon reviews outsourcing role" [CW, March 2] indicated that Mellon Bank Corp. is reconsidering its role in the outsourcing business. This is incorrect.

Let me set the record straight: Mellon is committed to strengthening its position as a major provider of outsourcing services. Statements to the contrary in your article completely misrepresented our position.

There is a sizable body of evidence that illustrates our position as a major outsourcing provider — including the significant resources we've dedicated to outsourcing and recent successes in signing on major new clients.

As you can well imagine, your article was unsettling for our customers and employees, and we've been placed in a position of defending a commitment that, in fact, has not diminished during the three decades we have provided financial data processing services.

Bolstered by a history of technological reinvestment, our commitment is stronger today than ever before and represents a key component of our strategy. Your suggestion to the contrary is regrettable.

W. Keith Smith
Vice chairman
Mellon Bank NA
Pittsburgh

Where many are called and few chosen

Strange as it may seem, Martin Goetz [Viewpoint, CW, Jan. 13] and Earl Cox [Letters to the Editor, CW, March 2] are both right.

Object-oriented programming techniques (OOP) do offer real, demonstrated potential to help deal with our industry's ongoing software development and maintenance problems.

Building new application programs and systems from simple, clear, robust and reusable objects will one day be the norm.

It won't be for everyone, however. Taking the object perspective during analysis, design and programming mandates special talents, skills and genius.

Data flow techniques — the current rage — only require that observers act as bloodhounds who trace the flow of paper. Where objects are the goal, "Many are called, but few are chosen."

Goetz's skepticism is on the mark. For too long, we've believed that endless process, protocols and software packages could do our analysis, design and programming — and we probably always will.

The OOP approach forces the industry to recognize that we have too many people, inappropriately selected and trained, with the wrong set of tools. Will we ever learn?

Howard D. Weiner
President
The Number Co.
Catharpin, Va.

Tick, tick, ticking

Based on two recent articles, "Dissatisfaction No. 1 reason to find new job" [CW, Feb. 24] and "Working harder to get the same raise" [CW, March 2], it seems that many IS shops are sitting on a ticking time bomb — employee turnover — just waiting to explode.

Many employers have been lulled into a false sense of security based on the tight job market. They incorrectly infer from today's low turnover rates that their employees are truly satisfied. From what I've seen in many organizations, this is a risky assumption. Far from being happy with their current jobs, employees are tolerating today's situation while they wait for the economy to turn around.

The savvy employers are thinking in terms of strategic retention strategies to hold on to their best talent. We know how to analyze the true causes of turnover and how to improve employee retention. The challenge is to use this information — together with increased line management accountability — to hold on to the valuable resources who otherwise might walk out the door at the first opportunity.

Gil E. Gordon
Monmouth Junction, N.J.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

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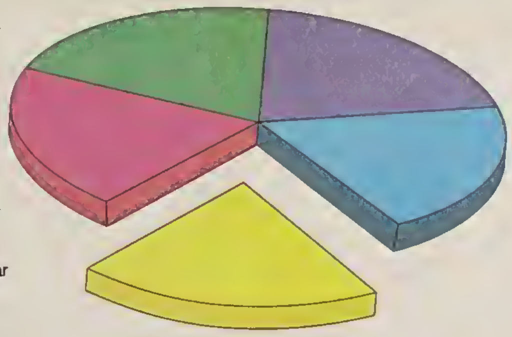

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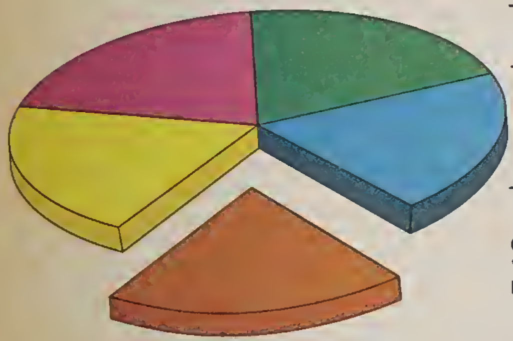

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Avoiding Big Blue blunders

JOHN P. MURRAY

IBM's current struggle for improvement, and perhaps survival, brings up issues that all of us need to consider. No matter how we feel about IBM's current sorry state and whether its difficulties are deserved, we should take heed of the circumstances that brought the company to this pass and consider the possible parallels with our own installations.

We have an opportunity to learn from the mistakes of IBM. Refusing to see our installations as being susceptible to the same forces that have bedeviled IBM would be an unfortunate, possibly even fatal, error because there are some IS organizations that are already in predicaments very similar to IBM's, and more are going to join the group.

Some of us are just as complacent as IBM has been. Some of us have lost touch with customers' needs and goals, becoming too insular and too convinced that we have all the answers. Even worse, some of us are allowing attitudes to develop that say what is good for us must be good for our customers.

Such attitudes are unfortunate. First, they blind us to the reality of the changing technical world in which we operate. Second, they create ill will among those who use our services. To the extent that they see us as unresponsive to their needs, customers will be encouraged to look beyond our installations to resolve their problems. Many of IBM's customers will tell you that is exactly what happened in their cases.

In fact, some of us are already letting competitors come in and take away our market share with more effective or lower-cost technical solutions.

Some of us have lost our speed and responsiveness as a result of bloated bureaucracies and a tendency to place more emphasis on following the rules than on serving the customers in the best possible manner. Increasingly, we hear our customers say development cycles that exceed six months are not acceptable. A sensible response would be to work to meet their requirements, but often we simply say that it cannot be done.

Other weaknesses that helped get IBM into trouble can also be found at many of our sites — failure to focus on expense; failure to recognize technical and business changes in our industries; and failure to make the cultural changes necessary to align our operations with the changing world beyond our walls.

Bob Dahm

As is going to be the case with all service businesses, IS departments can expect to face increasingly stiff competition for customers. External service providers are going to try to grow their businesses by replacing us. And, given the advent of easier, faster and less expensive technologies, as well as their own increased technical self-sufficiency, customers are going to be more inclined to consider these options.

In some companies, departments have long had the option of going outside the organization to purchase IS services. In most cases, however, that option was not exercised. This will change.

Increasingly, we are going to have to deal with smart competitors equipped with appropriate technology, strong customer service attitudes and good marketing sense. These competitors are going to mount increasingly aggressive and successful campaigns for our customers.

Are our installations going to go the way of IBM? Some are, but many of us can avoid that circumstance if we are willing to take some corrective action.

Murray a senior IS consultant at Viking Insurance Co. in Madison, Wis.

So who's behind those product guides, anyway?

RICK BLUM

I know what's the matter with the high-tech industry. Of course, I could sell this insight for a bundle, but I'm going to share it with you folks for free as a way of doing my part for U.S. competitiveness and because I think both marketing managers and the customer community could benefit from understanding the psychology that keeps high-tech marketing departments tied up in knots.

The basic problem is that high-tech companies have no idea how to deal with their marketing personnel, who are an unusual breed, surpassed in quirkiness only by IS personnel.

While successful salespeople are born to sell and engineers are trained to discipline, inhabitants of marketing's corridors are as likely to be educated in Zen Buddhism as they are in nuclear physics.

I've managed to isolate several personality types indigenous to high-tech marketing departments, each of which requires a slightly different management approach:

- **The techie.** The techie was an engineer before joining marketing and feels a greater alliance to his old buddies than to his new group.

The techie's problem is that he gets frustrated when those same buddies ignore his product development strategy because they never read as far as the marketing section of the base document. The only way to motivate a techie is to send him encouraging comments over electronic mail. He'll ignore them but will be ecstatic that someone uses a product he engineered.

- **The pseudotechie.** The pseudotechie spent years in field service and is sure he knows more about engineering than research and development. The pseudotechie becomes disenchanted when he realizes that engineering ignores his product strategy because they never read as far as the marketing section of the base document. The best way to motivate the pseudotechie is to ask him technical questions, such as, "What is the backplane limitation on communications lines?"

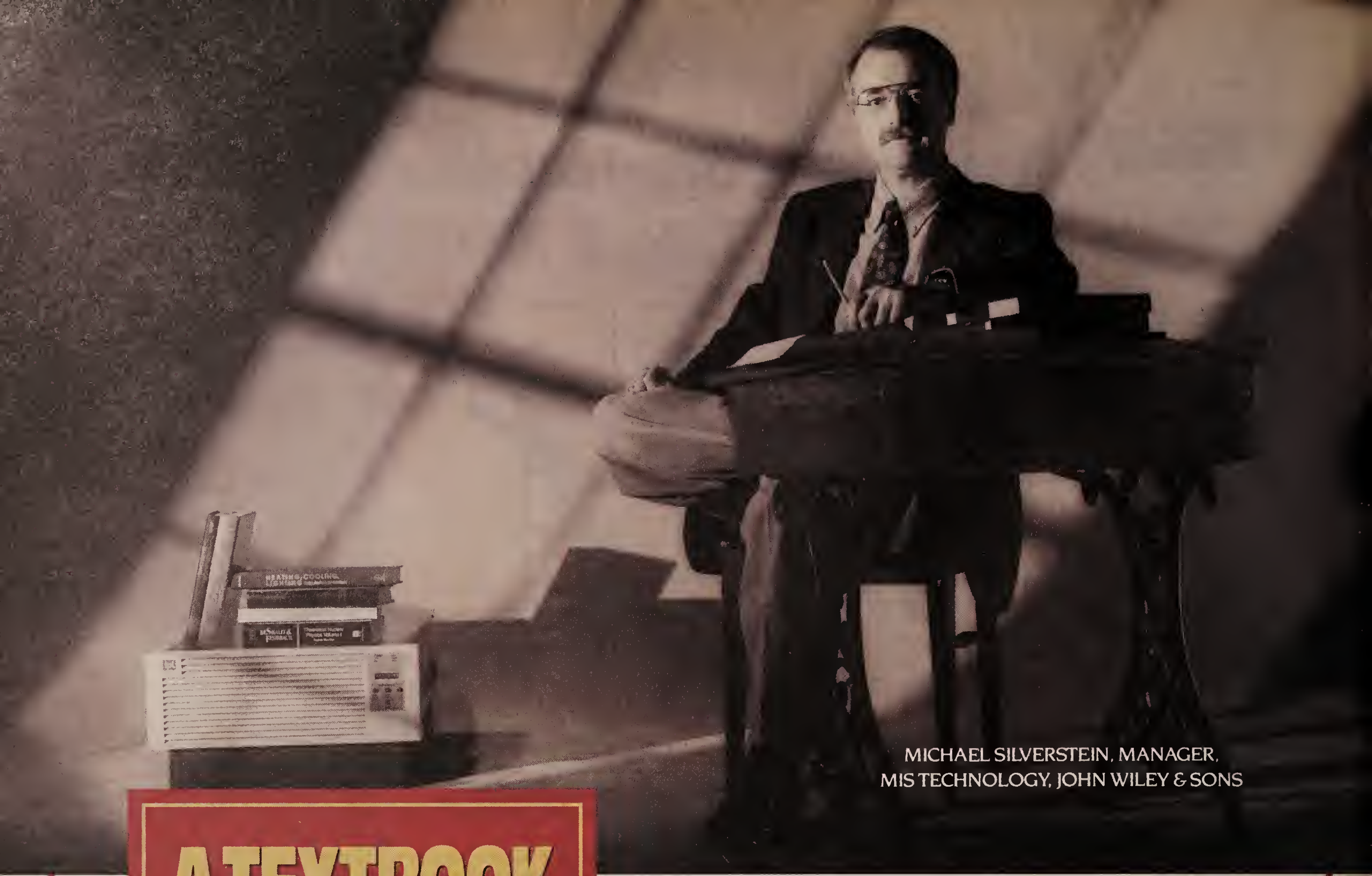
- **The communicator.** The communicator has a background in psychology and got into high tech by accident. The communicator is unreasonably attached to the idea that if he can just get all the various organizations together to talk, all conflicts will disappear, and the product will ship three months early, to the shock of the entire industry. When the release date has slipped three quarters, the best way to put the fire back in his eyes is by saying, "I put you on this product precisely because it's so controversial."

- **The stylist.** Usually a former software analyst with a newly acquired MBA, the stylist places stock in looking good, sounding good and letting everyone know it. The stylist focuses on selling strategies, putting together elaborate plans from product introduction through end-of-life scenarios. A life-sustaining pep talk will be required after the first big presentation to sales, which invariably ends after only 10 minutes when the vice president of sales says, "Bag it. We've decided to adjust the comp plan instead."

- **The calculator.** Tired of the monotony of finance, the calculator moved into marketing to get where the action is. Unfortunately, the calculator's idea of action is spending six hours a day massaging spreadsheets of projected costs and revenue. The calculator is thrown off by constant demands to attend meetings to discuss product requirements. When these demands begin to affect his attitude, the best cure is to suggest he determine the cost of these meetings and use the results to modify his spreadsheets.

- **The writer.** Well-versed in products from years of documenting everything from software utilities to uninterruptible power supplies, the writer has absorbed enough knowledge to actually originate product specs, features, etc. Since no one ever takes these ideas seriously, the writer is likely to fall into occasional funks. At this point the only way to remotivate him is to present him with a corporate excellence award and a three-level promotion. Otherwise, the writer will likely leave the firm to author one of those kiss-and-tell articles that show up in industry publications. And nobody wants that to happen.

Blum, who was formerly employed in product marketing at a minicomputer company, is now a partner at the market research and communications firm Aquiline Associates in Carlisle, Mass.



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COMMENTARY

Carol Hildebrand

A remedy for Compaq

Compaq. Now there's an interesting situation. The plight of the Houston PC vendor reminds me of that of a portly gentleman who, after years of enjoying the pleasures of the table, suddenly realizes that "just one more helping of chocolate torte" is going to land him on a marble slab. So, our hero stoically forswears the goodies and hits the exercise room.

But alas, the road to slim, trim health is littered with nostalgia. Here, a favorite plate and goblet. There, a $900 million corporate campus to maintain. It's hard to stick to the new spartan regimen amid the remnants of Caligula's feast, but Mr. C perseveres.

Every day, he faithfully works out, shaving dollars off the budget, eliminating those free employee Cokes, slaving away under the tutelage of a peppy instructor — an instructor with boundless energy who always appears to be a couple of steps ahead. An instructor who looks strangely like a certain 26-year-old from Austin, Texas. Therein lies the rub.

Incomparable Compaq

Compaq is not built like Dell or any of the other clone vendors, and no amount of corseting and revamping is going to get the country's third-biggest PC maker into the kind of agile shape that competition with those companies demands.

Continued on page 37

System sorts data deluge

Otis Elevator's original desktop system makes accessing data easy

BY ROSEMARY HAMILTON
CW STAFF

FARMINGTON, Conn. — Otis Elevator, Inc. had so much financial data coming in from its 100 international groups and divisions that it was becoming counterproductive to deliver the data to managers at its corporate headquarters.

In the late 1980s, the information systems group decided to combat the problem with a personal computer-based system. It had to have two primary features: It had to make data easily accessible, and there had to be a mechanism to access only the data that the managers needed.

The result was CFO, an internally developed system based on off-the-shelf software, including Microsoft Corp.'s Windows and Excel spreadsheet. Completed last year, "CFO has helped us bring order to the chaos," said Jean Mordo, formerly chief financial officer at Otis' world headquarters and now president of Latin American operations.

"When you have so many entities reporting so much data, you can't possibly print it out and distribute it to anyone who might have a need for it," he explained.

Work can be fun

Mordo said at least 45 financial executives at headquarters are using CFO today. "It has [resulted in] an immense gain in productivity," he said. "There's less wasted time. . . . Also, it has made everything more interesting and fun."

CFO was part of an overall shift to a Windows-based environment that began in the late 1980s, Mordo said. The firm first installed the software at its world headquarters, then the North American operations adapted it. More recently, it has been installed at the European and Asian head-

Continued on page 37

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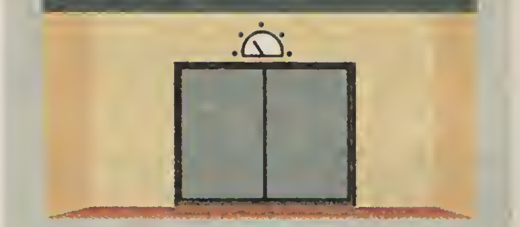

Otis Elevator, Inc.
Farmington, Conn.

- **Challenge**: To create user-friendly system for executives and financial analysts that deposits financial data from multiple divisions onto one desktop workstation.
- **Strategy**: Developed a system called CFO, based on Microsoft Windows and Excel and customized with internal code.
- **Results**: Financial staff uses CFO to examine data from various international Otis divisions and to produce reports.

Solid-state disks reach PC

BY MICHAEL FITZGERALD
CW STAFF

New drive technology is making its way from the mainframe to the personal computer. Drive makers are coming out with small computer systems interface (SCSI)-II devices that work as solid-state memory.

Two drive makers, Newer Technology in Wichita, Kan., and ATTO Technology, Inc. in Amherst, N.Y., introduced solid-state disk drives. ATTO's drive was a follow-up to a product it first started making in 1988, but solid-state drives, a mainframe convention for years, have made few inroads in smaller systems.

A solid-state drive acts as virtual memory, greatly decreasing the amount of seek time for information because it eliminates seek mechanisms and rotational latency while expanding capacity far beyond that of a machine with conventional random-access memory.

The SCSI-II Dart *solid-state drive has access times that can dip below 0.1 msec.*

Newer Technology claims that its SCSI-II Dart drive transfers data at 12M byte/sec., with access times that can dip below 0.1 msec. Newer Technology also said that its Dart drive, which acts as virtual memory, will allow users to work more effectively with large images or record files. It is available in sizes from 4M to 512M bytes.

ATTO's SiliconDisk Plus can transfer data at 10M byte/sec. and cuts access time to 0.02 msec. The disk uses a Motorola, Inc. 68020 processor with a dedicated SCSI-II processor. It also holds up to 512M bytes of memory. Such speed does not come cheap. ATTO lists its SiliconDisk Plus at $2,995 for users. The base price for Newer Technology's Dart is $4,700.

Targeting portables

In a separate announcement, Intel Corp. and Conner Peripherals, Inc. also announced that they signed an agreement to develop flash-memory storage products, aimed at both portables and industrial uses.

Seagate Technology, Inc. in Scotts Valley, Calif., also announced that it will now ship a 65.5M-byte hard drive in the 2½-in. form factor demanded by notebook computers; it is also shipping a 214M-byte 3½-in. drive. Both drives cost $395.

Disk Technologies Corp. in Winter Park, Fla., expanded its Disctec RHD line of removable 2½-in. hard drives, adding a 120M-byte version ($1,295). Designed for portables, Disktec offers a docking bracket ($65 to $100) that lets it be used in machines with 3½- or 5¼-in. hard drives.

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COMMENTARY

Jesse Berst

The case for Windows 3.1

You're only a few weeks away from getting bombarded with ads about Windows 3.1. Microsoft is engineering its most massive marketing campaign ever. But even though you're going to read a lot about Version 3.1, very little of it will be geared to the special priorities of IS professionals.

The typical "one-computer, one-user" consumer doesn't realize what a pain a system upgrade can be for an IS shop: how time-consuming and expensive it is to update hundreds of workstations; how dangerous it is to risk incompatibilities with your custom applications; how easy it is to overburden the support staff; and how expensive it can be if you're forced to upgrade all the applications as well.

Let's look at Version 3.1 from the IS point of view.

Despite the challenges mentioned above, I think most shops should upgrade. The most compelling arguments are not the cosmetic improvements, but the changes under the hood. I'll spotlight six factors of vital importance to IS departments:

- **Stability.** Here's the No. 1 reason for my upgrade recommendation. Windows 3.1 has added parameter checking that makes the environment more stable. In the past, a misbehaved application would bring down the entire system. Thanks to parameter validation, one bad app won't spoil the entire barrel. An application can crash without corrupting the entire system.

These improvements won't eliminate all system crashes. Because it is based on DOS, Windows 3.1 can never be as robust as newer operating systems such as OS/2 and Windows New Technology. But even though Version 3.1 isn't failsafe, it is much, much better.

- **Compatibility with 3.0 applications.** It's crucial that the new version support older applications. Otherwise, you'd be forced to update all your software immediately. Microsoft claims it has had 12,000 beta testers. For the past six months, the emphasis has been on finding and eliminating 3.0 incompatibilities. Yes, there will still be problems. After all, there are currently 5,000 different Windows apps for sale. But I feel confident that Version 3.1 will run most 3.0 applications without a hitch.

This is one case where Microsoft's notorious delivery delays may actually help users. Version 3.1 is so long overdue that other companies have had months to solve compatibility issues.

- **Installation improvements.** Have you noticed that software companies never talk about the true cost of an upgrade? They never mention that each installation can cost hundreds of dollars in technician time. Multiply that by hundreds of workstations, and the amount gets frightening.

You'll be pleased to know that Microsoft has made installation easier and faster. For instance, you can create an automated setup to save time. And there are several documented ways to install Version 3.1 over a network.

- **Improved support.** Microsoft learned from the 3.0 fiasco. It was unprepared for the demand. But it's ready this time. Product Support Services is ramped up. The company has added new support areas in CompuServe, and Microsoft University has created a four-day course called "Microsoft Windows for Support Professionals." It's a hands-on, thorough examination of upgrade issues.

You can also buy a video course called "Upgrading to Microsoft Windows 3.1: Video Training for Support Professionals."

- **TrueType.** I thought Microsoft should have licensed Adobe Type Manager and built it into Windows. Microsoft, however, thought it could put more money in its own pocket by reinventing Adobe's wheel with its own font solution called TrueType.

Now that it's finally here, TrueType is a wonderful convenience. Fast and reliable, it gives you high-quality scalable fonts no matter which program you run and which kind of printer you use. It removes the incompatibilities between screen fonts and printer fonts, moves us closer to the dream of what-you-see-is-what-you-get.

- **Better networking.** Although Version 3.1 improves networking support, it's still a long way from ideal. Frankly, I won't be satisfied until basic network services are built-in to the operating environment. In the meantime, Version 3.1 works better with the standard network operating systems, maintains network connections and browses network files much faster. These improvements aren't enough to justify the upgrade on their own but will be welcomed by network administrators.

There are plenty of other new features in 3.1 — an improved File Manager, audio support, built-in OLE and more. The six factors cited above, however, are the ones that will sway most IS departments.

There may be one additional reason to favor the change to 3.1. As I write this column, Microsoft has not yet announced its upgrade pricing. It may decide to set a low price to keep people from migrating to OS/2. Although I don't know what the final decision will be, I'll be surprised if the street price ends up much higher than $50.

Berst is the publisher of Redmond, Wash.-based "Windows Watcher" newsletter, a monthly briefing service for software executives and corporate technology managers.

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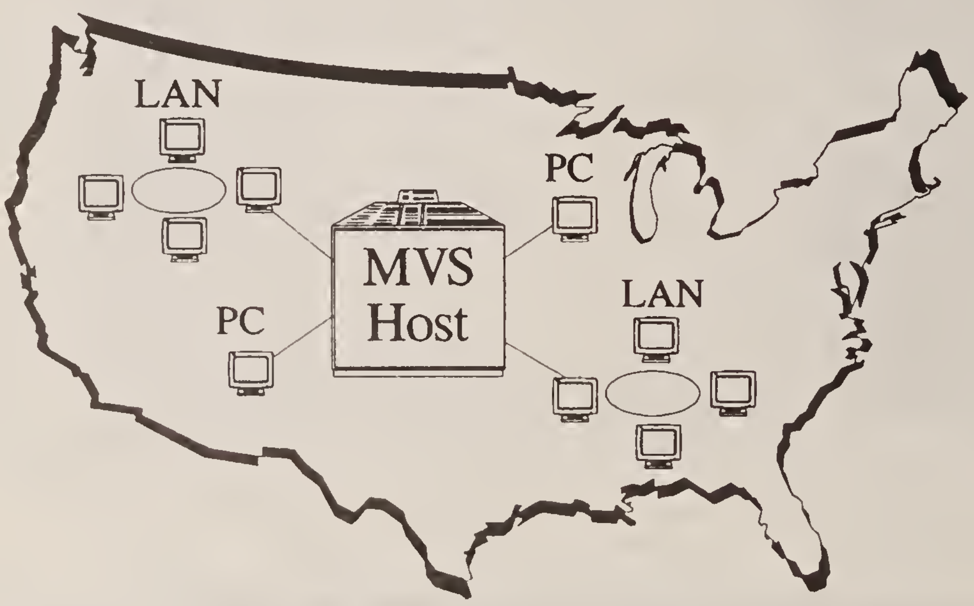

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Integrated Mac tools in demand

BY JAMES DALY
CW STAFF

The success of low-cost Apple Computer, Inc. Macintosh models such as the Classic as well as the electrifying success of the company's new Powerbook portables has rippled into the desktop software market, creating new demand for inexpensive integrated Mac applications.

Integrated applications are geared toward mobile users looking for compact applications that pack a set of standard business tools into an inexpensive package. They are considered a good option for those repelled by the high cost of full-featured software that is overloaded with esoteric features most users will never touch. They also do not require the vast amounts of memory or storage of their full-featured cousins.

Vendors, too, have taken a shine to compact integrated applications. Many see them as a way to secure the entry-level customers who may one day need the full-featured products.

No need to switch applications

Integrated applications typically allow several disparate documents to be combined on the page at once, eliminating the need to switch applications or load up a Mac with multiple applications. Data from all the documents can also be pulled into a single document.

In recent weeks, a wave of integrated Mac applications have hit the market.

The most recent entry for the Macintosh market is the release of Beagle Bros., Inc.'s Beagleworks. The $295 package offers word processing, spreadsheet, chart, database, draw, paint and communications modules that share a common tool palette. Beagleworks also offers full System 7.0 functionality, including publish and subscribe, virtual memory, 32-bit addressing, TrueType and balloon help.

Macvonk USA in Narberth, Pa., has just shipped Handiworks, which pulls in a word processor, spreadsheet, address manager and page layout applications. The $175 Handiworks also uses a frame structure that allows users to open "frames" of one document type within an application of another type. Separate applications can thus be placed side-by-side.

Claris Corp.'s Clarisworks uses a similar frame structure that integrates word processing, spreadsheet, database, graphics and communications capabilities. The program takes up less than 600K bytes of disk and can share dictionaries with other Claris applications, which helps to conserve disk space. Clarisworks retails for $299.

Microsoft Corp.'s Works for Macintosh beefs up the basic integrated applications package with a telecommunications program and some simple drawing tools. The program also has a mail merge feature and takes up only 590K bytes of disk space. It sells for $295.

Apple's Claris division also publishes Appleworks for the Apple II series. The program was one of the first successful integrated Macintosh applications and unites a word processor, spreadsheet and database with a common interface. It sells for $169.

Great Works from Symantec Corp. costs $299 and combines integrated functions — word processor, spreadsheet, database, communications, charting — with a large collection of file translators.

System sorts data deluge

CONTINUED FROM PAGE 35

quarters as well.

Mordo said before CFO, he had been pushing to get a desktop standard in place for Otis executives and support personnel. "Our vision was standard hardware and networks," he said. "The other key idea was Windows. When I picked the platform, I specifically wanted Windows, the idea being that I wanted all users to be able to switch from one application to the other."

Otis' Mordo: *CFO system helped bring order to the chaos*

To create the package, Mordo said, he considered what he as a CFO would want in a system. "I wanted the ability to get data within a short number of [mouse] clicks, without a lot of typing and without a lot of painful access," he said. "I wanted to get into the information system that would give me key statistics on any one of our companies."

Otis, with revenue of $4.3 billion last year, is a wholly owned subsidiary of United Technologies Corp. and is one of the largest providers of elevators and escalators in the world. The company has some 50,500 employees and installs about 33,000 pieces of equipment per year worldwide. Some of its more notable installations are at the Eiffel Tower in Paris and the Vatican in Rome.

CFO was designed with the Excel spreadsheet as its foundation. The company hired a consultant to write a program that would tie Excel to a local-area network-based data retrieval system called Micro Control from IMRS, Inc. in Stamford, Conn. The staff defined a set of reports for the IMRS software, which automatically configures the raw data from Otis' divisions into these formats.

Within Excel, users find an additional menu option called CFO that will automatically launch them into the data-retrieval system. The company also developed an extension to CFO called Chartbook. This allows users to click on selections within CFO that they want printed out in chart form.

"If you are in corporate, you have responsibility for worldwide operations," Mordo said. "It is difficult to look at all those numbers. You need pictures."

Before deciding to develop CFO, Otis considered executive information systems but found that the available packages were either "too complicated or too simple," Mordo said.

The company also had the option to develop a system from scratch, but Mordo said extending Excel and linking it to Micro Control allows users to work with data in a spreadsheet environment.

"We shopped around for packages and are pretty happy with what we've got," Mordo said.

Symantec nails virus

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. Macintosh users may have gained more than a few chuckles when they last played Tetris. Their systems may now harbor a devastating new virus.

But do not panic yet. In response to the spread of Macintosh virus MBDF A, Symantec Corp. has released an updated Symantec Antivirus for Macintosh (SAM) Version 3.0 that protects systems against a virus known to bring both applications and system files to a crashing halt.

Symantec officials said the MBDF A virus has been traced to the games "Obnoxious Tetris," "Ten Tile Puzzle" and "Tetricycle," also called "Tetris-Rotating." It typically attaches itself to applications and system files, creating inconsistencies that can lead to a system crash.

SAM Version 3.0 users can immediately update the detection and protection capabilities of their program against the MBDF A by entering the new user definition into SAM Virus Clinic. After entering the definition, they can then scan their application and systems folder for MBDF A.

To detect and repair infected files, users can download the new virus definitions file free from the Symantec Bulletin Board at (408) 973-9598. Those new definitions can also be accessed via CompuServe, America Online or AppleLink.

Hildebrand

CONTINUED FROM PAGE 35

Their decision not to get into the mail order game is a good indication of this.

The direct mail manufacturers — the Dells, Gateways, Zeos — are relentless in their cost-control measures. At Dell, it seems that every move the company makes is measured in terms of keeping it fast and lean.

Michael O'Dell, president of product development, makes this abundantly clear when he says Dell would certainly add on a nice-to-have feature that costs $10, but a similar $75 bell or whistle would end up on the inventing room shelf rather than the superstore shelf.

Compare this to the Compaq spokesman who recently talked about how excited its engineers got when they were handed the mandate to design products with costs in mind. A new challenge, yes, but it also sounded like a novelty item for them. It will take a long time for frugality to seep through a culture accustomed only to explosive growth. And no amount of seeping will saturate attitudes thoroughly enough to compete with the smaller, hungrier sharks.

What has been dinned into our ears industrywide is that Compaq needs to compete with the clones to survive. Hogwash. It seems to me that playing the other person's game at the expense of your own strengths is asking for a drubbing.

No question that pricing was a problem. Compaq has been addressing the price gap since its Autumn of the Long Knives and is edging into the realm of realistic price points.

Its previous strength — premium technology at a premium price — is still a tenable position if you remove that last half of the slogan. Being a quality technology player in the current "Two PCs for a Dollar" market is a difficult position to exploit, but it's a better bet than abandoning a stronghold.

What Compaq needs to do is learn how to blow its own horn better. The company's history of extensive quality testing, of designing internal components that the Gateways buy on the spot market — of changing their suppliers as prices fluctuate — needs to come to the forefront.

Flexing marketing muscles

Compaq's new advertising push, due out in the second quarter, is going to make a thrust in this direction, pointing out the kind of quality details that Compaq never really boasted of before, company officials said.

That will help users ante up the 5% price delta many say they are willing to pay for a product they perceive as technologically superior. But Compaq still needs to find a product hook that isn't already loaded down with competitors.

Whether it be software bundling, increased service and support or some combination of gimmicks tied to the company's quality warhorse, a cohesive and well-structured push in this direction will go far in helping the Houston giant move away from reacting to those peppy Dell exercise videos and find its own regimen.

Hildebrand is a *Computerworld* staff writer.

Leading Edge tries out 486

BY CAROL HILDEBRAND
CW STAFF

Leading Edge Products, Inc. did not claim to live up to its name, announcing its first Intel Corp. I486-based products just last week.

The company hung its products on the upgradability hook. The two products, the D4/SX-20 and the D4/DX-33, are easily upgradable, said Steve Elia, director of product development.

The D4/SX-20 is based on the 486SX chip, while the DX-33 is based on the more full-featured 33-MHz 486DX processor.

"Just about each feature has an upgrade path that's easy. A user is not tied to one particular vendor for a proprietary board," Elia said. "We're not the fastest or cheapest, but we have created a system that is painless to upgrade."

The machines are XT/AT-based boxes that come standard with 4M bytes of random-access memory, expandable to 32M bytes, 64K-byte external cache and a Super VGA video controller with 512K bytes of video memory. The systems have six available expansion slots and three additional drive bays.

Leading Edge is significantly behind the introduction curve on 486 machines. The firm has been showing them in demonstration form since 1989, but they were not able to pull anything together until now, Elia said.

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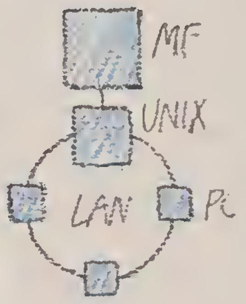

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COMPUTERWORLD

1992 Computerworld Editorial Calendar (January-June)

Issue Date	Ad Closings		Editorial Feature	Show Distribution	Ad Readership Issue	Response Card Decks
	Color*	B/W				
Jan. 6	Dec. 20	Dec. 27	**Executive Report:** The Information Systems Contribution to Quality			
Jan. 13	Dec. 27	Jan. 3	**Product Spotlight:** Windows Applications			Mails: Jan. 15 Space Close: Dec. 6 Mat'l Close: Dec. 9
Jan. 20	Jan. 3	Jan. 10	**Executive Report:** Customer Service **Industry Closeup:** Automotive Industry			
Jan. 27	Jan. 10	Jan. 17	**Product Spotlight/Buyers' Scorecard:** LAN Management	Communication Networks Jan. 28-30 Washington, D.C. Windows OS/2 Jan. 28-30, San Jose, CA	Harvey Study	
Feb. 3	Jan. 17	Jan. 24	**Executive Report:** Using IS for Fast Track Product Development			
Feb. 10	Jan. 24	Jan. 31	**Product Spotlight:** E-Mail	Networld Feb. 11-13, Boston	Starch Study	Mails: Feb. 12 Space Close: Jan. 3 Mat'l Close: Jan. 6
Feb. 17	Jan. 31	Feb. 7	**Executive Report:** Beyond Sales Force Automation			
Feb. 24	Feb. 7	Feb. 14	**Product Spotlight/Buyers' Scorecard:** Accounting Systems			
Mar. 2	Feb. 14	Feb. 21	**Executive Report:** Information Systems at the Point of Customer Contact			
Mar. 9	Feb. 21	Feb. 28	**Product Spotlight/Buyer's Scorecard:** Client/Server Application Development		Starch Study	Mails: Mar. 11 Space Close: Jan. 31 Mat'l Close: Feb. 3
Mar. 16	Feb. 28	Mar. 6	**Integration Strategies:** Pulling Macs Into the Enterprise Network **Industry Closeup:** Aerospace			
Mar. 23	Mar. 6	Mar. 13	**Product Spotlight/Buyers' Scorecard:** RISC Desktop Machines and Servers	DB Expo Mar. 23-26 San Francisco	Starch Study	
Mar. 30	Mar. 13	Mar. 20	**Executive Report:** Can IS be Held Liable? Liability for the Loss or Misuse of Sensitive Information			
Apr. 6	Mar. 20	Mar. 27	**Product Spotlight/Buyers' Scorecard:** PC Software—Fresh Application Categories and New Twists on Old Ones **Special Supplement:** Innovative Windows Application	Comdex Spring '92 and Windows World Apr. 6-9, Chicago		
Apr. 13	Mar. 27	Apr. 3	**Executive Report:** Doing Business Abroad			Mails: Apr. 15 Space Close: Apr. 3 Mat'l Close: Apr. 6
Apr. 20	Apr. 3	Apr. 10	**Product Spotlight/Buyer's Scorecard:** Printers Best Suited for a LAN Environment			
Apr. 27	Apr. 10	Apr. 17	**Executive Report:** Disbursing the Power of IS		Starch Study	
May 4	Apr. 17	Apr. 24	**Product Spotlight/Buyer's Scorecard:** Midrange Systems That Run Enterprises			
May 11	Apr. 24	May 1	**Integration Strategies:** Creating an "Open" Company **Industry Closeup:** Personal Care Industry		Starch Study	Mails: May 13 Space Close: Apr. 3 Mat'l Close: Apr. 6
May 18	May 1	May 8	**Product Spotlight/Buyers' Scorecard:** Routers	Interop East May 18-22 Washington, D.C.		
May 25	May 8	May 15	**Executive Report:** To Be Announced			
June 1	May 15	May 22	**Product Spotlight:** What the Well-Equipped Help Desk is Using			
June 8	May 22	May 29	**Product Spotlight/Buyer's Scorecard:** MRP II			Mails: June 10 Space Close: May 1 Mat'l Close: May 4
June 15	May 29	June 5	**Executive Report:** To Be Announced			
June 22	June 5	June 12	**SPECIAL SUPPLEMENT:** *Computerworld's* 25th Anniversary **Product Spotlight/Buyers' Scorecard:** Portable Computing (laptops, notebooks, pen-based and wireless technologies)	PC Expo June 23-25 New York City AIIM June 22-25 Anaheim	Starch Study	
June 29	June 12	June 19	**Executive Report:** To Be Announced			

* Includes ads placed within Executive Report or Product Spotlight sections and premium positions.

Please Note: Executive Report topics will be announced one month prior to ad closing. Your sales representative will provide you with specific information on each topic.

Ventura Publisher 4.0: Not for beginners

Technology Analysis — A roundup of expert opinions about new products. Summaries written by freelance writer Emily Leinfuss.

Ventura Software, Inc.'s Ventura Publisher 4.0 narrows the gap between professional publishing and desktop capabilities with new enhancements, but it does so within its traditional interface, presenting an obstacle to new users, reviewers reported.

Ease of use: Ventura Publisher 4.0 is powerful and easy to use if users are familiar with earlier versions of the software, but new users face a formidable learning curve. Reviewers criticized the nonstandard interface, particularly the Delete and Insert keys.

Output: Reviewers reported that print speeds range from sluggish to good. *PC Week* was able to print four-color separations in one hour.

Import/Export: The new version has added Object Linking and Embedding and Dynamic Data Exchange support, which expands links to text and graphics from other applications.

Tools: Ventura announced four add-on products plus an Undo feature that only affects one level.

Value: The package, priced at $495, is great for producing documents with the same layout on each page but not as good for documents with different layouts, reviewers said.

Ventura Software's Ventura Publisher 4.0

Reviews	Ease of use	Output	Import/Export	Tools	Value	Overall
PC Week 2/3/92	Cranky, non-standard interface	High-end publishing	Easier to add tables and charts	Many additions, powerful feature	Most complete color package	Great for old users
Desktop Vol. III, No. 6	Uses own character set	Sluggish printing speed	OLE fits nicely	Comprehensive integration	Welcome enhancements	Sidesteps midlife crisis for package
Windows Magazine 12/91	Mathematically driven	Add-on products an advancement	Incomplete Windows integration	More powerful key features	Improved all around	Answers complaints with improvements
PC Computing 1/92	Works well with Windows	Fine control of layout	One document at a time	New tools improve work	Targeting pros	Significant improvement
Users						
Jerry Day, Hewlett-Packard Co.	■■■	■■■■	■■■	■■■	■■■■	Most powerful PC tool
Michelle Buck, AT&T	■■■■	■■■■	■■■■	■■■■	■■■■	Like it, but heavy on memory
Dan Hackett, Communications Designs	■■■■	■■■■	■■■	■■■	■■■■	Worth mastering
Analysts						
Andy Seybold, Dataquest, Inc.	■■■	■■■■	■■■	■■■	■■■	High-end full-function
Wayne Yacco, Yacco Communications	■■	■■■■	NC	■■■	■■■■	Only four-color separation PC product

Key: ■■■■ Very good ■■■ Good ■■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial information

Ventura Software, based in San Diego, Calif., is a wholly owned subsidiary of Xerox Corp. Established in 1990, the company does not disclose financial information. Xerox's revenue was $17.8 billion in 1991 with profits of $454 million.

Ventura responds

Anne Galdos, director of product marketing:

Ease of use: The nonstandard use of Delete and Insert keys is a holdover from our GEM version. The company will be addressing the keyboard shortcuts to make them Windows-standard with the next revision of Windows.

Tools: We are working to improve the Undo, but we are thrilled to have one level.

Express Publisher: Inexpensive, powerful

On the opposite end of the spectrum from Ventura Publisher is Power Up Software Corp.'s Express Publisher, a package for entry-level users. Version 2.0 offers some enhancements to an already strong, inexpensive desktop publishing alternative.

Ease of use: Express Publisher 2.0 is fairly easy to use. It offers a comfortable graphical user interface and is very forgiving of errors. However, reviewers were not impressed with its on-line tutorial, and Power Up Software's technical support was found by reviewers to be neither accurate nor informative.

Output: The software can use Hewlett-Packard Co.'s LaserJet III's built-in scalable fonts directly, saving considerable printing time.

Import/Export: Version 2.0 can handle importing from most popular word processing packages, ASCII text and CGM files. It is weak in handling graphics files — it cannot import color or layered PCX files or gray-scale Tag Image File Format files.

Tools: Reviewers note that Express Publisher offers a wide range of fairly sophisticated tools. These include pointing, drawing and type manipulation functions.

Value: The product is a surprisingly powerful, feature-rich tool that is priced at $159.95.

Power Up Software's Express Publisher 2.0

Reviews	Ease of use	Output	Import/Export	Tools	Value	Overall
Infoworld 9/30/91	First line tool	Basic publishing	New graphics support	Text effects most significant	Worth notice, but not major update	Favorably impressed
PC Source 1/91	Familiar objects with unique appearance	Adds standard functions	New formats added	High-end drawing functions	Powerful, low-price	Practical features and dazzling effects
Computer Shopper 5/91	Powerful for nonprofessionals	Built-in HP LaserJet support	New choices	Text effects versatile	Power without the pain	Exciting new features
Users						
Rand Stairs, Best Restaurant Management	■■■■	■■■■	■■■■	■■■■	■■■■	Worth the money
Rich Vacco, Marketing Video Productions	■■■■	■■■■	■■■	■■■■	■■■■	Works well
Joel Seber, Tennessee Tech University	■■■	■■■■	■■■	■■■■	■■■■	Very good
Analysts						
Louis Belsky, Louis Belsky & Associates	■■■■	■■■■	■■	■■■	■■■■	Marvelous entry-level program
Sandy Churchill, BIS Strategic Decisions	■■■■	■■■	■■■	■■■	■■■	Good for entry level
Andy Seybold, Dataquest, Inc.	■■■■	■■■	■■■	■■	■■■■	Recommended for first-time user

Key: ■■■■ Very good ■■■ Good ■■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial information

Power Up Software, based in San Mateo, Calif., is a privately held company. The company does not release financial data. Established in 1985, Power Up had estimated gross annual sales of $25 million. The company employs 134 people.

Power Up responds

David Chang, manager of desktop publishing:

Ease of use: Our technical support staff has always received rave reviews from our user base. As far as the on-line tutorial, we haven't gotten much customer feedback on that.

Import/Export: It is a limitation of the product that we import black-and-white images only. We are working on supporting other images.

WORKGROUP COMPUTING

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Standards groups mold future LANs

BY JOANIE M. WEXLER
CW STAFF

Efforts to bring Asynchronous Transfer Mode (ATM) cell-based switching to local-area networks are heating up. Consequently, a question mark has popped up concerning which technology will dominate emerging high-bandwidth LAN applications such as multimedia.

The ATM Forum, a 20-company vendor and user implementors group, met last week in San Francisco to continue its work on an interface for linking emerging local- and wide-area ATM equipment. The group said it expects the final release of its User-to-Network Interface in late May.

Earlier this month in Denver, a tete-a-tete of the American National Standards Institute (ANSI) T1S1 committee on wide-area broadband networking continued work on a proposal for a local ATM adaptation layer.

That event came on the heels of last month's ANSI Fiber Distributed Data Interface (FDDI) standards committee meeting in Austin, Texas, where potential competitors FDDI-2 and FDDI Follow-on (FFOL) standards also progressed. They, too, address the time-sensitive nature of voice and video on LANs.

The 100M bit/sec. FDDI-2, which is compatible with its same-speed FDDI LAN predecessor, accommodates delay-sensitive voice and video traffic along with data. FFOL will bring cell-switching speeds of 600M to 1.2G bit/sec. to the table; ATM starts at 155M bit/sec. speeds.

Will standards survive?

All this standards activity and technical overlap has brought about industry discord as to whether FDDI-2, FFOL and local ATM will all survive or simply succeed one another, causing users to deploy them as they become available and then replace them with faster technologies. Most observers agreed, however, that FDDI and its intended successors will be the last shared-medium LAN because of burgeoning bandwidth needs.

"I don't think we'll ever see FDDI-2 to the desktop," said Jeffrey Stone, vice president of Infonetics Research, Inc. in San Jose, Calif. "ATM is coming so quickly that it's impacting FDDI, let alone FDDI-2."

However, Jim Hamstra, a consultant at Stanatek in Shorewood, Minn., said that "anyone who thinks FDDI is going to have a short life because of ATM is dead wrong." The reason, he said, is timing: "ATM standards will take till the end of the millenium to be final. FDDI is a done deal now, and prices are dropping."

However, Fore Systems, Inc., a Pittsburgh-based start-up, already has ATM LAN-adapter cards and switches in beta-test sites and plans to ship them this summer, said Robert Sansom, executive vice president. He said he expects per-port local ATM prices to be competitive with FDDI, initially rolling out at "something above $1,000."

Texas Instruments, Inc. wants to run multimedia applications to the desktop, but whether they will be supported by FDDI or ATM, "I don't know at this time," said George Chrisman, the firm's manager of electronic communications. However, Chrisman said he expects the second half of the 1990s to see ATM "widely dispersed in LANs and WANs."

Stone and others cited two driving factors pulling ATM into the local area. Unlike the shared-bandwidth nature of LANs, ATM is a point-to-point switched technology that provides workstations networked

Continued on page 42

Windows standard vies for industry support

BY MARYFRAN JOHNSON
CW STAFF

Make way for AlphaWindow — and for yet another contender in the standards ring.

AlphaWindow terminals, a new breed of character-based display terminals equipped with windowing capabilities, will appear at Comdex/Spring '92 from a variety of vendors committed to the emerging AlphaWindow standard.

Designed to work with any Unix-based host system, AlphaWindow terminals are sophisticated, character-mode text terminals that can display windowing features such as tiled and overlapped windows, pull-down menus and action bars. Pricing is expected to fall between ordinary display terminals and X terminals — somewhere in the $500 to $750 range.

Step up to downsizing

Should the idea catch hold, AlphaWindow terminals could provide a solid stepping-stone for businesses preparing to downsize applications from large systems to Unix-based networks, analysts said.

"AlphaWindow is an interesting transition point from host-based to client/server computing," said Tom Kucharvy, president of Summit Strategies, Inc. in Boston.

"It's not the thing that will take the industry by storm and stay around for 100 years," Kucharvy added. "But it is an interesting interim step by which companies can gradually bring users into a graphical environment with little investment and without having to rewrite applications."

Despite the similarity of names, the AlphaWindow standard has nothing to do with Digital Equipment Corp.'s Alpha RISC chip.

This new interface standard is the first accomplishment of the Display Industry Association (DIA), which formed in January 1991 after a number of terminal and system software vendors decided to create a standards consortium for character-based display terminals. The DIA now comprises 26 companies, including AT&T, DEC, Wyse Technology, Inc., The Santa Cruz Operation and Televideo Systems, Inc.

Six months ago, the group released its AlphaWindow techni-

Continued on page 42

More help for DEC Pathworks

BY ELISABETH HORWITT
CW STAFF

Third-party help has come to network managers who want to administer Digital Equipment Corp.'s Pathworks client/server platform using the environment of a familiar personal computer — rather than that of a DEC VAX/VMS host.

DEC purposely started out with VMS-based administration for Pathworks because, in its initial implementations at least, Pathworks was sold to local-area network installations that already had VAX-based administration of LANs, said David Glasson, DEC's business development manager.

DEC offers VMS Digital Command Language (DCL), a command-line interface, for invoking such administrative tasks as adding or deleting users, changing user privileges and monitoring and controlling printers, Glasson said.

However, DEC is increasingly positioning Pathworks as a multivendor client/server platform that connects a variety of clients to Ultrix and OS/2 servers, rather than just VMS servers [CW, March 9]. As Pathworks becomes less VAX-centric and more geared to the distributed LAN environment, administration will fall more to LAN managers and local help desks that may not have a VMS background, Glasson said.

For this reason, DEC says it welcomes third-party products such as those distributed by Voila Software in San Francisco and Webster Computer Corp. in San Jose, Calif., Glasson said. "Both aim at making a Macintosh file server easier to manage from the Macintosh," using familiar, icon-based commands rather than the command lines of DCL, Glasson said.

Both Webster Computer's NAServer Administrator and Voila's Path-Manager incorporate the Apple Computer, Inc. Macintosh's point-and-click user interface to make DEC's Pathworks administration services accessible to less experienced users, the vendors said. Webster Computer also plans to ship a Windows-based version of its product in the second quarter.

NAServer does support centralized administration of multiple remote LANs, Webster Computer spokesman Robert de Paola said. However, most installations are firms that are decentralizing Pathworks administration to local LAN help desks and managers, he added. NAServer makes it easier for them to do so by simplifying Pathworks administration tasks and organizing the way tasks are presented to match the manager's natural work flow, de Paola said.

Both vendors' products are said to handle a variety of Pathworks administration tasks, including the adding or deleting of user accounts; controlling user access to servers, directories and folders; password assignment; administration of VMS accounts; and managing Macintosh file servers, print queues as well as physical and logical disk drives.

Webster Computer's NAServer Administrator is also said to handle DEC's DECnet/Personal Computing Systems Architecture Client Software disk and file services on DOS, OS/2 and Windows clients. The product uses DEC's DECnet protocols to link the administration platform with VMS servers.

The Macintosh version of NAServer Administrator costs between $1,990 and $9,990, including VAX software. The original product, which Webster Computer distributes, was developed by Australian company Praxa. It supports any VMS version and Pathworks for VMS Version 4.0 or later.

Path-Manager, a product developed by Aleph Development Corp., is being distributed in the U.S. by Voila and is priced starting at $995 for a MicroVAX 2000 or 3100. The product requires VMS Version 5.3 or later.

Targeting the local LAN administrator

Simpler and friendlier administrators of DEC's Pathworks, Webster's NAServer Administrator and Voila's Path-Manager address the following user needs:

- **Allow basic functions, such as managing printer queues, to be delegated to less technical LAN administrators and help desk personnel.**
- **Save time and money by boosting administrator productivity. For example, NAServer is said to cut the time it takes to set up a new user account on Pathworks from 25 minutes to just a few.**
- **Allow LAN administrators familiar with Macintosh or Windows environments to manage Pathworks without training in DEC's VMS DCL commands.**

CW Chart: Janell Genovese

Groups mold future LANs

CONTINUED FROM PAGE 41

through an ATM hub with their own dedicated bandwidth over their medium of choice.

Then, several stations connected into one hub could have different-speed links running over different types of cabling. This could prove economical if various networked workstations have varying bandwidth requirements, and users do not want to outfit all workstations with the highest speed (and most costly) links.

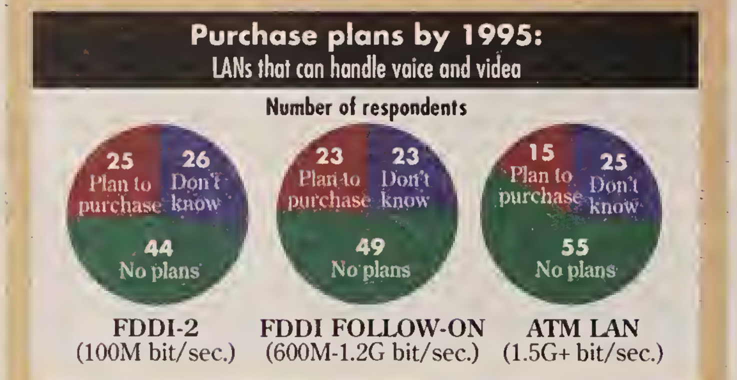
In addition, "it is clear that ATM will play an important role in the future of the telephone company," Stone said. "There is no other technology on the horizon. When we go to connect to the outside world, ATM will be there to fuse LANs and WANs into one seamless network."

Multimedia evangelist Apple Computer, Inc. has long been involved in chip development for FDDI-2 with AT&T Semiconductor and other chip makers. The vendor apparently also intends to support local-ATM; it joined five other T1S1 company members last November in proposing the local-area ATM adaptation layer to the T1S1 committee.

At least two smart wiring hub vendors said they intend to build ATM backplanes into their products. Cabletron Systems, Inc. expects to make an announcement by midyear. Chipcom Corp. would not give a time frame, but Vice President of Marketing Dave Fowler said he is not a proponent of FDDI-2 and expects LANs and WANs to collapse into one network via ATM switches about 1994.

LAN plans

Users are not sure what technology will support their local multimedia applications



Survey base: 95 companies with FDDI installed or with plans to install within one year

Source: Infonetics Research, Inc. CW Chart: Janell Genovese

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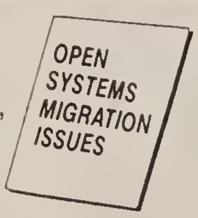

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Lehman Brothers invests in wireless Token Rings

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — Wireless local-area networking is seeping onto the equities trading floor at Lehman Brothers for redundancy insurance and hasty desktop installations.

Mike Foster, senior communications engineer at the firm, said his 4M bit/sec. Token Ring-compatible infrared LAN, called InfraLAN, from BICC Communications in Auburn, Mass., links two workgroups and serves as a backup to a corporate fiber backbone. In addition, it ensures that "if the business unit suddenly doubles in space, we don't have to worry about pulling cable," he said.

"We can get hardware on the desktop in minutes," he added. "If we went the conventional way, we'd have to pull cables from a LAN room and raise floor tiles. It's very expensive."

Foster said Lehman Brothers has been using InfraLAN since November, and "we've had 100% operation; the network has never gone down."

So far, Lehman Brothers has invested in two systems. Each system consists of a hub unit and an infrared beam unit. Each hub links, via copper cabling, to five individual workstations and an IBM 8219 fiber-optic repeater. Fiber-optic cable runs between the repeaters.

The two beam units communicate through the air, closing the part-fiber, part-infrared Token Rings. Mixing the two technologies into one network means that "if one side goes down, we are well prepared for backup, which is critical to a business such as ours," Foster said.

He explained that the cost per port drops as customers expand their wireless networks. He also noted that if the InfraLAN hub ports get filled, customers can purchase 802.5 (Token Ring-standard)-compatible, multistation access units (MAU), which plug into a standard data connector port on the InfraLAN hub.

Eight users can be connected to one $500 MAU, which brings the per-user cost to slightly more than $60.

> "THERE ARE A whole slew of reasons for going with infrared."
>
> MIKE FOSTER
> LEHMAN BROTHERS

Foster said he is "looking forward to the day Ethernet and 16M bit/sec. Token Ring versions are available," which BICC told him would be in the beginning of 1993. He noted that there are other wireless technologies available for Ethernet, but "there are a whole slew of reasons for going with infrared."

These include no Federal Communications Commission licensing requirement, the beam units being "easy to align" and "no unusual skills" required for installation, Foster said.

He added that infrared is a "very exciting technology to be associated with" and predicted that "when people come along with palmtops and laptops, we will use a number of wireless technologies. We should be becoming less dependent on copper cables; it's a natural technology trend."

New standard vies for support

CONTINUED FROM PAGE 41

cal specification, which defines a set of windowing and session management primitives that allow text terminals to perform a range of windowing functions. There are no graphics involved — only text can appear in the windows.

"We want this to become the standard character terminal for connectivity to Unix," said Stephen R. Jones, vice president of the DIA's international operations and managing director of JSB Computer Systems Ltd. in Cheshire, England. JSB sells a software product called Multiview Mascot, which manages the AlphaWindow capabilities from a host Unix machine.

> "ALPHAWINDOWS WILL GIVE users capabilities they really want at reasonable prices."
>
> RONALD COOKE
> DATAQUEST

Barclay's Bank in the UK is evaluating a project now that would swap out hundreds of X Window System terminals for AlphaWindow terminals managed by JSB's software, Jones said.

Multiview Mascot allows multiple applications to run concurrently in windows on an older standard terminal as well as on AlphaWindow terminals. The DIA has adopted Mascot as its reference platform for window management.

"For most workgroup computing, the ability to have multiple sessions on a screen is mandatory in today's work environment," said Ronald Cooke, a senior analyst at Dataquest, Inc. in San Jose, Calif. "AlphaWindows will give users capabilities they really want at reasonable prices and without a lot of cost of ownership."

Among the thousands of Unix applications on the market now, an estimated 90% to 95% of them are character-based and will run on AlphaWindow terminals, said Eileen O'Brien, manager of the terminals program at International Data Corp. in Framingham, Mass.

"The real question is: Does the world need another Windows?" O'Brien asked. "I'm skeptical until I see products out there for a year."

digital

DIGITAL UPDATE
THE OPEN ADVANTAGE

MARCH 1992

Find It EASY *Find It* FAST *Find It* NOW *with* CONTENT-BASED RETRIEVAL SOLUTIONS *from* DIGITAL

Mountain of Data, Minimum of Time

By solving one problem, technology sometimes creates a whole set of new ones. Here's an example: computers have made it so easy to store information that keeping it electronically seems to make more sense than throwing it away.

Now the problem changes from a lack of information to an information overload. Quick access to the right document from among the hundreds, perhaps thousands, of documents and other types of data stored on a system isn't just difficult, it's a problem reaching crisis proportions.

Perhaps the critical document contains information needed by a pharmaceutical company to produce a timely new drug offering. It could be updated maintenance information needed by an airline for its sites around the world. Or, more likely, it's a document you need right now in order to get your job done.

Whatever the document, it's useless to anyone unless it can be found quickly and shared easily — basic requirements for the efficiency and productivity of all organizations, including yours.

Content-Based Retrieval Puts Information at Your Fingertips

Information without access equals ignorance, says *InformationWeek*. And so it always seems the information you need is never lost — until you need to find it. That need has led to an entire category of information handling called "Document Management."

Document Management addresses how to achieve effective communication and shared information throughout an organization. A crucial part of Document Management is Content-Based Retrieval (CBR) — the ability to find and retrieve any piece of information without needing to know who created it, when it was created, or even where it is located on your computer network.

For instance, you want to include a specific quotation from a consultant in a presentation you're creating. You know the consultant's name, you know in general terms the subject addressed. On the other hand, you don't know who put the quote on your network, when they did it, or even what computer system may hold the article where the quote appeared — all usual requirements to successfully find electronic information. But with CBR, it's simple to ask your system to retrieve the quote simply by noting its content, without needing to know who created it, or even its network location.

Perhaps it's not text. Perhaps you need a scanned image. Or you need a scanned document. Or a spreadsheet. Or graphics. Whatever the information, if it's on your network your access to it is always only a few commands away with CBR.

Here are just a few examples of what you can accomplish with CBR:

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Digital offers the widest portfolio of CBR solutions available through a single source — a comprehensive set of superior products created by several of our software technology partners to help you solve even the most complex information retrieval problems.

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SOME DATA *on* DATA

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NEWS FLASH

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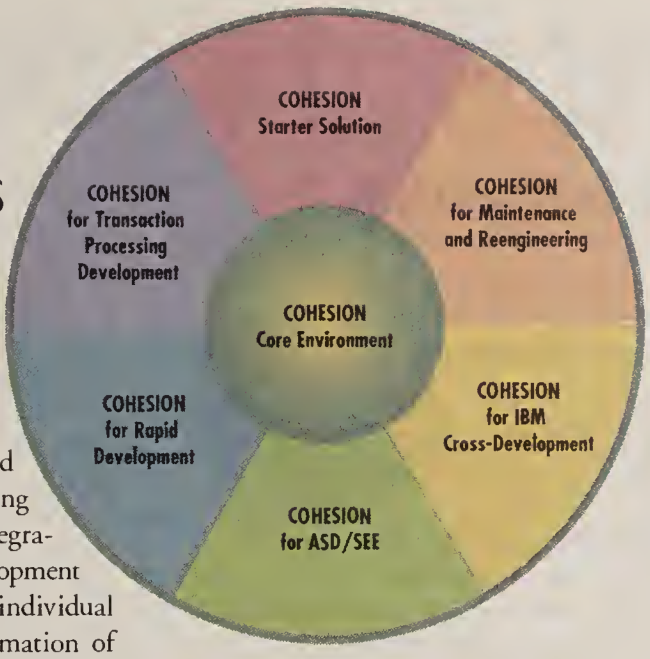
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Includes Mobilizer software, Poqet PC (1.21 lb, 7.0 MH 80C88 CMOS Microprocessor, 640K RAM, MS-DOS 3.3, 80-character × 25 line (CGA) LCD display, PC-XT style keyboard, built-in software for word processing, electronic card file, event organizer, and 2AA alkaline batteries); 2400 baud modem with serial adapter; 512 K Solid State SRAM Data Card.

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WHAT WOULD HAVE taken an hour or more with conventional tools takes just a few minutes with DEC Realtime Integrator.

Realtime computing is just what its name implies: computers being used to control or monitor events and processes as they are happening — in real time. From the research lab to the factory floor, engineers, scientists, and technicians use realtime computing for testing, measurement, and data acquisition and analysis.

Realtime applications are found in many industries, particularly in discrete and process manufacturing, where they are used to support product development and production. In the automotive industry, for example, engineers use realtime data analysis techniques to understand and refine the performance of new engine prototypes. Here, engineers design specific tests to determine the effect of different fuels, lubricants, or varying environmental conditions on engine torque, horsepower, or exhaust emissions.

Produce sophisticated realtime applications in minutes. Just use icons.

But it's a complex job to design the test, connect test and measurement instruments to the engine, connect the instruments to a computer, set up the event, run it, collect the data, and then analyze the data to understand results. Out of necessity, many engineers and scientists spend hours writing FORTRAN or BASIC programs to accomplish these tasks — instead of spending time developing and refining their products.

DEC Realtime Integrator Adds Speed to the Process

Software environments such as DEC Realtime Integrator allow realtime users to rapidly develop and execute their applications — without writing programs.

DEC Realtime Integrator's graphical user interface contains libraries of icons that represent commonly needed functions such as instrument control, data input and output, signal processing, data display, and data analysis. To build applications, the user simply selects icons with a mouse, positions them on the "work surface," connects them with lines, and the system is ready to go!

Take Time for Your Product, Not Your Program

"Drawing" an application using DEC Realtime Integrator typically takes less than one-tenth the time that's required to write the same program using conventional programming languages. Engineers no longer have to be programmers to get their jobs done. Instead, they can concentrate on what they do best — building new products. If applied to the engine test example above, DEC Realtime Integrator would dramatically cut the initial setup time for the tests. But the benefits don't stop there.

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- I/Otech, Inc.
- KineticSystems, Inc.
- National Instruments
- Preston Scientific, Inc.
- VG Data Systems

Data Analysis Application Vendors
- BBN Software Products Corp.
- SAS Institute, Inc.
- Signal Technology, Inc.

In addition, DEC Realtime Integrator can support any test or measurement instrument that conforms to the IEEE-488 or RS-232 standards. This includes the majority of instruments from Hewlett-Packard.

DEC Realtime Integrator now runs on VMS or ULTRIX systems, and will support OSF/1. When installed on a server, the product can also support PC and Macintosh systems through Digital's PATHWORKS integration software. This allows departments to make use of their existing desktop systems, yet still gain the benefits of DEC Realtime Integrator.

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Software links PCs and Unix systems

Locus' PC-Interface users are discovering easy, inexpensive alternative to network installation

BY JIM NASH
CW STAFF

INGLEWOOD, Calif. — With all the racket about which networking vendors are signing what agreements, it is easy to forget that some systems managers have rejected conventional networking altogether. Though their experiences have been mixed, these managers say they are satisfied with their choices.

Software such as Locus Computing Corp.'s PC-Interface enables companies to share files and printing among personal computers and Unix systems without the expense and confusion of installing a complete network operating system. Locus, based here, this month began shipping PC-Interface Release 4.1, which ties Novell, Inc. NetWare to 45 Unix systems.

PC-Interface users keep their PCs and Apple Computer, Inc. Macintoshes and link to Unix servers and mainframes over serial cable, Token Ring and Ethernet connections. They avoid the need for ponderous network installation procedures, system overhead and dedicated PC servers.

PC-Interface includes terminal emulation applications for Digital Equipment Corp. VT 52, 100/102 and 220 systems as well as The Santa Cruz Operation's color console system and Wyse Technology, Inc.'s 50 and 60 systems.

NetWare focused

The new version, which sells for $299 per desktop license, is designed for companies that already own NetWare networks and do not want to replace what they have with the more expensive and more complicated NetWare for Unix.

PC-Interface without the NetWare capability costs $235 per desktop. Unix server licenses cost $255 for DOS systems. A two-Macintosh license costs $720, and an unlimited license costs up to $4,800.

"We have a pretty big installed base right now," said Karen Matushak, corporate network analyst at Wausau Insurance Co. in Wausau, Wis. "We didn't want even larger problems starting from scratch with a network operating system." Wausau has used PC-Interface for about two years to connect its 24 IBM RISC System/6000s and 370 IBM and Compaq Computer Corp. PCs.

David Schenfeld, Unix systems manager at Voter Research and Surveys in New York, said, "This is much simpler [than running a full network operating system]. It's simpler to install. It's up in 10 minutes with no configuration needed."

Cost considerations

Not to be minimized is the cost, Schenfeld said. "Money's tight. With this, we don't need a server. We have two VAXs; why do we need a PC server? The VAXs are used for many things and also support our printer and file sharing."

Voter Research is an election monitoring service owned by Cable News Network, ABC, CBS and NBC. The company has 35 PCs, mostly IBM Personal System/2 Model 30s and 50s with 3Com Corp. network interface cards, which link to a pair of DEC VAX 3300s. They all share a single Hewlett-Packard Co. LaserJet printer.

"We could have gone with nets," Schenfeld said. "We had a [DEC] VMS network before, but it was cumbersome and trouble-prone." In the eight months PC-Interface has been running, he said, the system has worked smoothly.

He would, however, like to see improved error logging. Specifically, Schenfeld said he would like to be able to tell what has caused a desktop to log off accidentally. Better documentation is also needed.

Some solutions to bugs in PC-Interface are devised as the bugs come up. Matushak said she ran into a problem with improper mapping between her Token Ring and Ethernet subnetworks this month. At first, she said, PC-Interface just did not respond to requests for resources on Unix servers on different subnets. Then it would map requests to the wrong subnet.

Locus has developed a way to fix this problem, Matushak said, though it is cumbersome and requires the addition of a line of code to the log-on for each server. Matushak said she hopes for a more elegant solution.

IN BRIEF

Samsung bundles apps

- **Samsung Software America, Inc.** (SSA) plans to introduce in late April a line of Unix-based, shrink-wrapped commercial software for office automation. The suite of products will reportedly integrate multimedia technologies such as fax, electronic mail and voice processing. The Samsung applications will run on a variety of Unix platforms from Hewlett-Packard Co., Sun Microsystems, Inc., IBM and others, company officials said last week. Based in Andover, Mass., SSA is a U.S. subsidiary of the conglomerate Samsung Group in Seoul, South Korea.

- **Lotus Development Corp.** began shipping a version of Freelance Graphics for Windows that supports Hewlett-Packard Co.'s NewWave and other networking capabilities. The NewWave support will give the Lotus presentation graphics software access to the HP desktop organizer and local-area network capabilities, Lotus said. Users can license the networked version for $795 for the server edition and $495 for each node edition.

NEW PRODUCTS

Local-area networking hardware

Octus, Inc. has announced three products for network peripheral sharing.

Octus PrintConductor 650 is a stand-alone print server with 600 resident fonts. It simplifies the control of print resources, according to the company. It costs $3,995.

Octus FaxConductor 750 works with Novell, Inc. NetWare local-area networks and provides each desktop with send/receive fax capabilities as well as automatic archiving and resource accounting. It costs $5,995.

Octus PageConductor 550 is a printer-server card with high-speed printer emulations. It is priced at $3,495.

Octus
9940 Barnes Canyon Road
San Diego, Calif. 92121
(619) 452-9400

Lannet Data Communications has announced a plug-in, 16-port terminal server module card for its MultiNet smart hub.

The new LTS-16 module allows users to connect dumb terminals and other devices to one of four Ethernet local-area networks within the hub. Users can be switched between LANs automatically or via Simple Network Management Protocol.

According to the company, the LTS-16 board also allows companies with both Digital Equipment Corp. VAX systems and Unix systems from other vendors to communicate with dissimilar hosts through a single device.

A version supporting Transmission Control Protocol/Internet Protocol communications costs $3,595. With additional support for Local Area Transport, the cost is $3,995.

Lannet Data
Communications
7711 Center Ave.
Huntington Beach, Calif.
92647
(714) 891-5580

NCR Corp. has announced its release of two NCR StarLAN 10 Network Adapter Units for 10Base-T Ethernet local-area networks.

The adapters connect personal computers to 10M bit/sec. networks over unshielded twisted-pair wiring.

The LanPacer version ($299) works with 8-bit bus PCs and offers 16-bit internal architecture for high throughput.

The LanPacer+ version ($399) connects to 8- and 16-bit buses.

NCR
1700 S. Patterson
Dayton, Ohio 45479
(513) 445-2000

The Electro-Optic Products Group of Du Pont Electronics has announced a fiber-optic Token Ring Converter that meets the IEEE 802.5J draft specifications.

The TRC-020 connects directly to adapter cards and bridges as well as to Multi-Station Access Units. It is priced at $1,195.

Du Pont Electronics
Electro-Optic Products
3300 Gateway Center Blvd.
Morrisville, N.C. 27560
(919) 481-5100

Local-area networking software

Touchstone Software Corp. has introduced Checkit LAN Release 2.0.

The product collects personal computer configuration data throughout a Novell, Inc. NetWare local-area network. It also inventories software, performs virus scans and measures PC performance. The new version supports NetWare 386 and up to 250 users.

Pricing starts at $249 for a five-node LAN. A 250-node package costs $1,995.

Touchstone Software
Suite 250
2130 Main St.
Huntington Beach, Calif.
92648
(714) 969-7746

The Windows Support Group, Inc. has announced The Corporate Calendar, a groupware application for networked users running Microsoft Corp.'s Windows environment.

The software allows managers to determine when employees and facilities are free and to schedule meetings accordingly. It offers sophisticated search features, the company said, along with an address book, automatic notification and confirmation capabilities and security features.

The per user cost is $275. Microsoft Corp.'s SQL Server is required.

The Windows Support Group
150 W. 22nd St.
New York, N.Y. 10011
(212) 675-2500

Unisys Corp. has announced enhancements for its U 6000 series Unix servers, allowing the servers to be integrated into multivendor networks.

The new products include Multiprocessor NetWare for U Series, a version of Novell, Inc.'s Portable NetWare. The software allows the U 6000 series multiprocessor systems to function in client/server environments; user processes can run concurrently on separate processors.

Pricing is $3,495 for up to 16 users, $4,995 for up to 32 users and $7,995 for up to 250 users.

Other enhancements announced were ATS II communications servers and CAI-Net and CL/7 information management software.

Unisys
Box 500
Blue Bell, Pa. 19424
(215) 542-2239

Micro-to-micro

Digital Access Corp. and Niwot Networks, Inc. have announced a system allowing users to transfer data from one personal computer to another at megabit rates over existing telephone networks.

The system is based on Digital Access' Fracdial inverse multiplexer and Niwot Networks' AT/SD communications board. Users can program PCs to boot up automatically and transfer images or other complex data at more than 1.3M bit/sec. rates.

The system costs $2,195. Information can be obtained from either company.

Digital Access
Suite 200
11501 Sunset Hills Road
Reston, Va. 22090
(703) 471-5010

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ENTERPRISE NETWORKING

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IN BRIEF

Firms show EDI effort

- **American Software** in Atlanta said it has incorporated real-time electronic data interchange (EDI) into its business software applications in conjunction with **Sterling Software Ordernet Services Division** in Dublin, Ohio. The vendors said they will demonstrate the software at Sterling's EDI conference this week in Chicago.

  Meanwhile, **Digital Equipment Corp.** has reportedly enhanced its EDI line with a gateway that integrates client applications running on IBM systems with DEC VAX/VMS systems.

- New York-based **USConnect Partners, Inc.**, a partnership of network integrators, said it has teamed with three Canadian companies to offer an international service dubbed GlobalConnect. **CGS Microtechnologies, Inc.** in Montreal, **Proterm Data Systems Ltd.** in Ottawa and **Strohn Systems, Inc.** in Toronto have joined the 24 U.S. USConnect integrators to extend network integration services to the Canadian cities of Halifax, Vancouver, Calgary and Edmonton.

- **Merrill Lynch & Co.** has reportedly agreed to sell its remaining interest in alternative access carrier **Teleport Communications Group, Inc.** in New York. Cable television company **Tele-Communications, Inc.** in Englewood, Colo., will reportedly acquire 49.9% of Teleport stock and must purchase another 37.6% if 12.5% shareholder **Cox Enterprises, Inc.** in Atlanta does not do so.

  Cox President James C. Kennedy last month reportedly placed the first personal communications system phone call — to Federal Communications Commission chairman Alfred C. Sikes — with an **Omnipoint Corp.** wireless telephone.

Internet board sets SNMP security rules

Safety measures seen as particularly crucial for science, government, academic organizations

BY ELISABETH HORWITT
CW STAFF

A set of specifications now under consideration by the Internet Advisory Board promises to finally provide security features for Simple Network Management Protocol (SNMP).

The specifications were designed to prevent unauthorized personnel from getting hold of the secret codes that determine access rights to an SNMP management system or interfering with the SNMP management process, sources said.

The lack of security features reflects the quick-and-basic philosophy of the SNMP standards process. When the original SNMP specification was developed in 1988, "We could not get a consensus from the standards community on how to make it secure, so we made it insecure and got it out the door," said Jeff Case, president of SNMP Research, Inc., a Knoxville, Tenn., software and consulting firm.

FREQUENT USERS OF the international network service Internet . . . are particularly prone to break-ins from outside.

SNMP security is particularly important to scientific, government and academic organizations, which are frequent users of the Transmission Control Protocol/Internet Protocol that SNMP was designed to manage, said Mark Leary, a research director at Technology Investment Strategies Corp. in Framingham, Mass.

As frequent users of the international network service Internet, such organizations are particularly prone to break-ins from outside, Leary said. What is more, such technically oriented user communities get more than their share of hackers, he said. "It's not like a [business'] PC LAN environment, where many

Continued on page 52

HP/IBM pact fires up Fiber Channel market

BY JOANIE M. WEXLER
CW STAFF

A recent alliance between IBM and Hewlett-Packard Co. is expected to fuel delivery of computer components that are able to leverage the ultrafast network transfer rates of emerging Fiber Channel networks.

IBM has agreed to market its compact disc laser technology through HP's Communications Components Division, allowing more ubiquitous availability of connections that can keep up with the neophyte 100M byte/sec. Fiber Channel technology. Also, codeveloped IBM/HP technology will spring up in jointly marketed optical network adapter cards, receivers and chips.

The Fiber Channel standard is under construction to replace multiple interface cards in a computer with one very high-speed fiber interface, explained Dal Allan, chairman of the American National Standards Institute's Fiber Channel Working Group. Allan is also president of Endl, Inc., a Saratoga, Calif.-based consulting firm specializing in computer interfaces.

Combined on one interface card in a computer would be drivers and adapters for such protocols as High-Performance Parallel Interface (Hippi), Intelligent Peripheral Interface, IBM's copper mainframe Block Multiplexer Channel and fiber-based, 18M byte/sec. Escon channel, Fiber Distributed Data Interface (FDDI), small computer systems interface, Ethernet and Token Ring.

For users, this means "hardware gets cheaper because the computer supplier puts on only one interface instead of several," Allan said.

Edwin Riddle, head of the NASA-Langley Research Center's communications and network systems branch in Hampton, Va., pointed out that "the computer's ability to keep up with the network is a legitimate concern. In some ways, networking is getting ahead of what computers can handle."

One step beyond

Riddle said he has Fiber Channel in the back of his mind as a next step after 100M bit/sec. FDDI. Currently, the center runs Cray Research, Inc. supercomputers, and "a number of researchers would like to access it from workstations at their desks over higher bandwidth than we can get with FDDI," he said.

The center uses the copper-based, 800M bit/sec. Hippi for linking Cray machines, "but there is a limitation to the distance you can go; it's not suitable for extending to researchers' desks," Riddle said.

He said he hopes to use Fiber Channel for extending Hippi to other campus locations. A switching scheme in the standard would accommodate Riddle's need for workstations to select resources from various computers over the network.

Fiber Channel switches are reportedly under construction by firms such as Alcatel Canada Wire, Inc., Canstar Division in Toronto and Ancor Communications, Inc. in Minneapolis.

The IBM/HP relationship is significant for promulgating the high-speed connections because "system vendors prefer not to purchase components from their competitors," Allan said. "And IBM has no merchant optical marketing capability."

Europeans opting for TCP/IP over OSI

BY ELISABETH HORWITT
CW STAFF

European users, frustrated with the slow maturation of Open Systems Interconnect (OSI) standards, may be turning to Transmission Control Protocol/Internet Protocol (TCP/IP) — just like their U.S. counterparts, according to both The Yankee Group and Business Research Group (BRG) market research firms.

However, it is taking longer in Europe for both TCP/IP and OSI to gain a major foothold on corporate backbones, the consulting companies agreed.

Not that Europeans are necessarily giving up on OSI. A recent survey by Newton, Mass.-based BRG of 512 European information systems executives found that 51% agreed that OSI-based solutions are more important than non-OSI solutions. Nevertheless, less than 2% of sites surveyed are now using OSI, while 35% are using TCP/IP, according to BRG.

"It's a question of what is working now, which is without question, TCP/IP," said Tom Wood, a senior industry analyst at BRG. While Europeans have been slow to implement OSI transport protocols, however, they have aggres-

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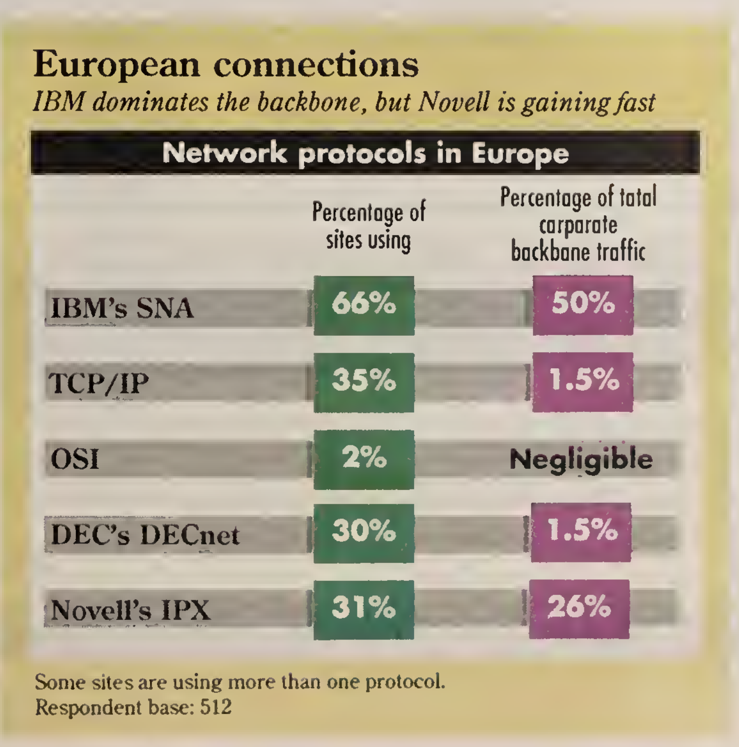
European connections

IBM dominates the backbone, but Novell is gaining fast

Some sites are using more than one protocol.
Respondent base: 512

Source: Business Research Group

CW Chart: Janell Genovese

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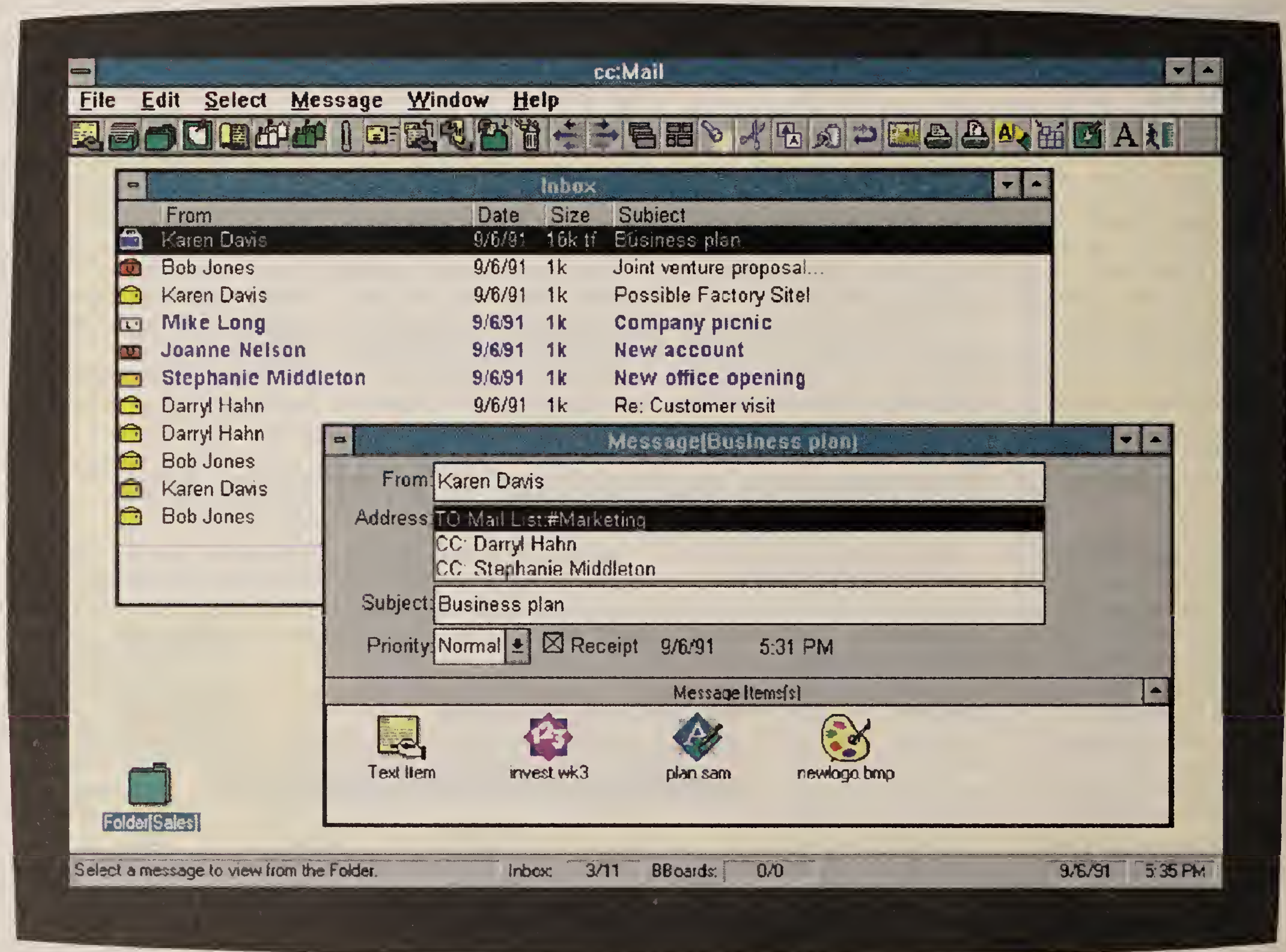

From	Date	Size	Subject
Karen Davis	9/6/91	16k tf	Business plan
Bob Jones	9/6/91	1k	Joint venture proposal...
Karen Davis	9/6/91	1k	Possible Factory Site!
Mike Long	9/6/91	1k	Company picnic
Joanne Nelson	9/6/91	1k	New account
Stephanie Middleton	9/6/91	1k	New office opening
Darryl Hahn	9/6/91	1k	Re: Customer visit
Darryl Hahn			
Bob Jones			
Karen Davis			
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From: Karen Davis
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a wholly-owned subsidiary of Lotus Development Corporation. *This quote reprinted with the permission of *PC World*

Board sets rules for SNMP safety

CONTINUED FROM PAGE 49

users are afraid to hit the keys."

In contrast, secure network management is not a high priority for commercial firms such as The Travelers Corp., said Robin Layland, an engineering consultant at the insurance firm. "If someone gets into my network with the goal of messing up my network management security, I'm concerned; but I'd be more worried if they decided to mess up the applications we use to do business," he said.

Furthermore, Travelers already has security to stop unauthorized entries at the gateway that interfaces its private network with Internet, he added.

Layland, who is helping Travelers choose between Hewlett-Packard Co.'s and IBM's SNMP-based network management systems, said he was confident that both vendors will put in adequate levels of security. However, he said he did not care if their security systems are standards-based or proprietary.

While finalization of the specifications is still several months away, a number of vendors have committed to implementing the protocols in their SNMP systems.

HP, IBM, Novell, Inc., Digital Equipment Corp., Ungermann-Bass, Inc. and Hughes LAN Systems, Inc. each said they will implement the Internet's secure SNMP protocols. Novell said it expects to be one of the first to implement the new standard. DEC hopes to have a product out by year's end, and most of the others have provided no implementation time frame. Several companies that participated in the development of the protocols have already come out with development versions.

Security specification features

The SNMP security specifications now before the Internet Advisory Board would provide the following features:

- A data encryption standard-based specification that encrypts messages sent between the SNMP manager and agent. This is useful for sending down new or updated keys that determine what management functions a given SNMP station can access or that define authorization levels within a station.
- Origin authentication that prevents unauthorized users who have obtained an SNMP workstation's access code from masquerading as an authentic user.
- Replay protection that keeps a user from delaying an SNMP transmission, such as a command to take a workstation off line, and sending it at a later date.
- Message integrity that keeps unauthorized users from changing the contents of an SNMP message.

Europe opts for TCP/IP over OSI

CONTINUED FROM PAGE 49

sively implemented the OSI electronic-mail standard, X.400, both Yankee and BRG said.

Neither OSI nor TCP/IP has made it big on the corporate backbone, which is still largely dominated by IBM's Systems Network Architecture (SNA), according to the BRG survey.

One likely reason for this is that Europeans have been less willing and able to build multiple, high-speed corporate networks in Europe than have U.S.-based firms, according to Sean Phelan, a principal analyst at the Boston-based Yankee's UK branch. Dedicated lines supporting 2M bit/sec. or even 64K bit/sec. are expensive and still scarce in some European nations, Phelan said.

Novell, Inc.'s IPX was present at 31% of the sites and accounted for 26% of backbone traffic in BRG's European survey.

On the network management side, 45% of respondents to BRG's survey said that having an integrated network management system was very important, and 33% said it was quite important.

IBM's NetView won out as the most popular network management system, with 25% of respondents saying NetView was very important to their network management needs. BRG translated "very important" as "either installed or about to be installed," Wood said.

The Simple Network Management Protocol, a de facto standard aimed at managing TCP/IP networks, came in second, with 12% of users saying it was very important, BRG said. OSI Common Management Information Service/Common Management Information Protocol was very important to 11% of respondents; Systems Center, Inc.'s SNA management system NetMaster was very important to 5%. DEC's Enterprise Management Architecture was very important to 4%; Hewlett-Packard Co.'s OpenView to 2% and AT&T's Accumaster Integrator to only 1% of respondents.

Are you using a mainframe?

E-mail market to grow 32% a year, industry poll says

ARLINGTON, Va. — The number of electronic-mail users among Fortune 2,000 companies could triple in four years, according to a survey released last month by the Electronic Mail Association (EMA).

The survey predicted that the number of E-mail users in the Fortune 2,000 in 1991 — 8.9 million — could grow to 15.6 million by 1993. Among existing E-mail user sites in this population, an average 23% growth is expected, with the overall number of E-mail users growing at 32% per year, the study reported.

The annual volume of messaging will increase significantly as well, from 2.3 billion messages in 1991 to 14.3 billion messages in 1995. Interestingly, the EMA survey found that only 19% of sites track message volume today.

The study, conducted between February and June 1991, involved almost 2,000 interviews with U.S. and Canadian companies with $500 million or more in revenue. The study also found E-mail to be more pervasive at the home office: 45% of employees at headquarters used E-mail, compared with 26% at branch locations.

ELLIS BOOKER

NEW PRODUCTS

Systems network architecture

BMC Software, Inc. has announced a 3270 data stream optimization product.

Ultraopt/VTAM reduces 3270 traffic across the entire VTAM network, according to the company. It cuts outbound data streams by 40% to 95% and inbound streams by 30% to 90% by using the Local Format Storage feature of the IBM 3174 Established Controller. Screen formats are stored at the controller board rather than being transmitted the entire distance from terminal to host.

Tiered pricing starts at $24,500.

BMC Software
Box 2002
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77487
(713) 240-8800

Customer-premises equipment

CrossComm Corp. has introduced a frame-relay interface for its ILAN router.

The ILAN router supports both Token Ring and IBM Systems Network Architecture/Synchronous Data Link Control traffic over public frame-relay networks, the company reported.

ILAN handles 4M and 16M bit/sec. Token Ring traffic and supports network management by IBM's LAN Manager, NetView and Simple Network Management Protocol.

Pricing for the router starts at $6,000.

CrossComm
140-C Locke Drive
Marlboro, Mass. 01752
(508) 481-4060

VisionPlus 113, a color videoconferencing system, has been announced by VideoTelecom Corp.

The system features a 13-in. color monitor, local and remote camera control, a fax port for in-band fax transmission and an audio system designed to eliminate acoustic echo. VisionPlus 113 operates over dedicated or switched digital networks at speeds of up to 384K bit/sec.

Pricing starts at $33,950.

VideoTelecom
1901 W. Braker Lane
Austin, Texas 78758
(512) 834-2700

Micro-to-host

Rabbit Software Corp. has upgraded its suite of Unix-to-mainframe connectivity products.

Open Advantage 5.0 provides improved 3270 emulation for Token Ring and Synchronous Data Link Control networks. It allows the network administrator to preconfigure 3270 file transfer default parameters, reducing users' errors, the company said.

The product also offers improved online Help, a utility for monitoring current session use and 64K bit/sec. line speed support.

Open Advantage 3270-SNA/SDLC pricing starts at $1,995 for eight sessions. Open Advantage RJE-SNA costs $2,195, and Open Advantage APPC costs $3,495.

Rabbit Software
7 Great Valley Pkwy. E.
Malvern, Pa. 19355
(215) 647-0440

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orporation. [1] Price includes AS/400 E02 computer and operating system. Remarketer prices may vary. Leasing available for as low as $270 a month for an AS/400 E02 through IBM Credit Corp.

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After three years, Legent finds niche

Initial stumbling of Morino/Duquesne Systems merger gives way to solid product blend, users say

BY GARY H. ANTHES
CW STAFF

VIENNA, Va. — This week marks the three-year anniversary of the marriage of two $60 million software companies, Morino Associates and Duquesne Systems, Inc. Now emerging from a period of unification that the principals concede was not easy, $250 million Legent Corp. faces the market with what users say is a strong line of products for the information systems manager and an exceptionally responsive support staff.

"You'd have to say the merger was difficult," said Mario M. Morino, Legent vice chairman and founder of Morino Associates. "But we've lived through the assimilation process."

According to Morino, the two companies had very different product philosophies. "Morino had an obsession with the concept sell, the high-level sell, integrated systems," he said, whereas Duquesne's approach was oriented to selling "point products" — individual software utilities for specific problems. Legent's product line and its approach to marketing and support now reflect a blend of those philosophies, Morino said.

Legent's Morino: *'Merger was difficult'*

Just five months after the merger, Legent picked up Business Software Technology, Inc., and earlier this year, it filled a gap in its product line by acquiring Spectrum Concepts, Inc. and its products for bulk transfer of data and software. Legent now offers software tools for the IS manager in five general areas (see chart below).

The last major step in the fusion of Morino, Duquesne and Business Software occurred last year when Legent merged the three operating divisions that had mirrored the earlier companies. Now, Legent is organized by function, with groups such as product development and client services spanning all products.

"A year ago, they were struggling; they tried a couple of things to bring the organization together that didn't work," said Charles Phillips, an analyst at Stamford, Conn.-based Sound-View Financial Group, Inc. "But they finally came up with the correct formula."

Legent is now moving its products and its corporate philosophy out of the mainframe data center and is putting more emphasis on value-added services such as customer support and consulting.

Users praise Legent for its responsiveness and can-do attitude. "Bring a problem to Legent, and you feel you have a partner that will come back with a solution," said George Balascak, director of technology services at Sealand Service, Inc. in Edison, N.J. "Some other vendors think they have you, that you have no choice but to use their products."

According to John F. Burton, Legent's president and chief operating officer, customers are squeezed between increasing technological complexity and shrinking budgets. They want to deal with fewer, stronger vendors that offer broader product lines and better support. Those forces have driven Legent's merger and acquisition philosophy and led the company to double its staff of sales-support technicians in the past 1½ years.

Porting products

Legent is using object-oriented languages and graphical user interfaces to port its mainframe products to distributed environments. For example, the company's Endevor Workstation tool for software development is essentially a rewrite of Endevor/MVS as a single C kernel, with separate C++ shells for DOS, Microsoft Corp.'s Windows and OS/2.

Legent customers expressed enthusiasm for its migration of products to the desktop but showed caution in following suit with their own systems. "Move to client/server? I'm sure we will but not at this time," said Legent customer Mike Halbert, manager of capacity analysis at McKesson Corp. in San Francisco.

Another user said he was happy with his Legent products but would still tend to look first to a personal computer software specialist to provide his desktop solutions.

The rising complexity of technology and falling budgets are creating consulting opportunities for the company, and Legent is gearing up to offer product-independent management advisory services to the IS manager and his bosses.

Later this year, Legent will introduce a service that allows customers to compare the performance of their data center with that of other customers'. The service will be based on performance data that is sent by subscribers from their databases to a data repository at Legent. Legent will then use the database to generate comparison reports.

Key Legent products

Business Management
MICS Accounting and Chargeback; CATS (Computer Assets Tracking System).

Operations Management
AutoMate — for automating MVS or VM console operations; Multi-image Manager — for sharing resources in mixed environments; BUNDL — for output management and distribution.

Systems Management
Optimodel — for modeling the effects of system changes; TSO/MON — for TSO performance analysis; Astex — the Automated Storage Expert for MVS storage performance analysis.

Network Management
NetSpy, LANSpy — for network performance analysis; TPX — for simultaneous access to many applications via a single 3270 terminal; XCom 6.2 — for data transfer across heterogeneous environments.

Applications Management
ENDEVOR — tools for management and control of applications software.

CW Chart: Michael Siggins

Big companies persist in push for open systems

BY TIM GRANTHAM
SPECIAL TO CW

TORONTO — More large corporations are moving to open systems, and they are talking tough to vendors that cannot or will not meet their needs.

"The traditional suppliers [of information technology] are not taking the risks that the customers are," said Ed Hoerner, director of infrastructure implementation and standards at GTE Telephone Operations. "We're something like IBM's 12th or 15th largest customer, and it's not clear to me that we're getting enough attention from them."

GTE Telephone Operations plans to realign its entire enterprise information system to a client/server architecture built with standards-based products. In doing so, Hoerner told attendees at the recent Executive Symposium on Unix and Open Systems, the company expects to deploy 80 to 100 data servers and shut down two of its six data

Continued on page 58

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Oltman's game plan energizes tech-savvy SHL Systemhouse

BY NELL MARGOLIS
CW STAFF

OTTAWA — Seven months into the chief executive officership of former Andersen Consulting managing partner John Oltman, once-unassuming SHL Systemhouse, Inc. has come roaring into the big time with the ferocity of a Montreal Express and the consistency of a carefully crafted game plan.

Which is exactly what Oltman has. Leveraging the globalization and downsizing trends that continue to sweep the corporate landscape, the company that users and analysts had already considered to be technology-savvy has been newly energized. Systemhouse packs seasoned skills in network management, distributed applications and heavily Unix-based systems integration, several analysts said. It is now targeting these strengths at firms whose efforts to streamline or merge have left them with diverse and disparate systems, departments and applications.

In addition, Oltman has moved quickly to devise and deploy a trio of semiautonomous business units aimed at vertical markets: telecommunications, postal services and human resources.

It seems to be working. Last month, for example, Systemhouse capped off a busy six weeks (see chart below) with its approximately 30th deal since Oltman took the reins: a "several billion-dollar," 10-year outsourcing deal with Bell Canada, coupled with a comprehensive global development, management and marketing partnership with Bell Canada's parent, BCE, Inc.

The deal's significance is heightened by the fact that only a year ago, BCE — then a 26% stakeholder in Systemhouse — appeared skeptical about the firm's future. This agreement, which ups BCE's ownership stake to approximately 60%, implies that its reservations have been largely overcome.

At least one major user said the quality for which the firm has been long, if not widely, known is not suffering in the face of the sudden quantity buildup.

"What we've been so happy with [Systemhouse] about is that on a groundbreaking and complex application, we've been a moving target, and they've been moving with us all along," said Merlin Rudd, chief of the Los Angeles Fire Department, which first contracted with Systemhouse in 1989.

The L.A. Fire Department is counting down to the July rollout of a fully automated, computer-aided dispatch system built by Systemhouse to help the department's 4,000 firefighters at 104 stations throughout the metropolitan area handle the more than 300,000 emergency calls that come in every year.

SHL's Oltman *targets three vertical markets with plan*

The system will link some 50 IBM Personal System/2 Model 70 computers, each with its own dispatch software, along a Token Ring local-area network. Rudd said it will catapult L.A. to the forefront of fire department automation, including supplies, digitized voice response and interactive graphical maps of the system — "Everything we've asked for, and without tacking on price increases at every turn."

A year ago, said Charlotte Walker, CEO and an analyst at Martin Simpson & Co., many people wrote off Systemhouse as a corporate culture shaped by "quiet, technogeek Canadians who did superb work, underadvertised it and undercharged for it."

Then came Oltman, a consultant with 21 years of Andersen experience under his belt and, according to several industry observers, a hunger for his own command.

"I like to lead," he said. "I don't know how long I'll be doing it. The first vision is easy; knowing when to move off it is hard."

Whether or not it is easy, Oltman's first vision is moving quickly. Since he joined Systemhouse last July, the new CEO has brought in some 20 new executives — including several former Andersen colleagues — to head up about 15 new operations.

Oltman is consciously playing as strengths two corporate characteristics some industry observers formerly tagged as drawbacks: Systemhouse's technologic depth, which, in the absence of a similarly well-developed marketing ability, tended to cast the company as too ingrown to be a player in the outsourcing market, and its Canadian base, which "makes us seem unthreatening," Oltman said.

The oft-disparaged Canadian connection, he said, is actually an ace. In a commercial market gone suddenly global, "our Commonwealth heritage plays very well, particularly in Southeast Asia," he said, adding that the Canadian government is very supportive. "As a Canadian corporation, we're a lot less threatening to clients who would feel overwhelmed by some of our competitors and to some of our competitors, which can be a great advantage," Oltman said.

A month in the life of SHL Systemhouse

The march of time has become more of a dash under the Oltman administration. In the first month of the current year, the firm did the following:

Jan. 7 Created controller's post; promoted Bob Cronin, former VP of finance, to fill it.

17 Signed joint marketing agreement with subsidiary of Canada Post, expected to be worth some $50 million over the next three years.

20 Expanded Los Angeles County hospital outsourcing contract by $7.3 million.

29 Won a three-year, $9.7 million systems management contract with Canada Post.

30 Signed biggest-ever outsourcing deal, $100 million pact with Government of Nova Scotia and Maritime Telephone & Telegraph.

31 Appointed former Goldman, Sachs & Co. IS director Fred Horn to head San Francisco office.

Source: SHL Systemhouse

CW Chart: Janell Genovese

Big companies persist in push for open systems

CONTINUED FROM PAGE 57

centers.

"We can't let up on our demand for open systems products, or the vendors will think users have lost interest and [the vendors] will retreat to their proprietary products," said Thomas Nash, manager of research at the Petrotechnical Open Software Corp. (POSC). POSC recently presented its members — including petrochemical giants such as Mobil Oil Corp., Chevron Corp. and British Petroleum Co. PLC — with its specification for open systems. The specification requires compliance with standards such as Posix, XPG3, the Open Software Foundation's (OSF) Motif, Transmission Control Protocol/Internet Protocol and Open Systems Interconnect.

According to Nash, 27 POSC members now use the specification to procure information technology. However, he said, while many independent software vendors have responded positively to the specification because it simplifies development requirements, hardware suppliers have been less enthusiastic. "They're not used to customers coming to them with a list of requirements," he said.

Still, said Glen Breed, manager of new technology at BP Exploration, at least they are listening. "In the past," he said, "I had to sit there while the hardware vendors told me how they were going to solve my problem. Now I can speak my mind, and at least they take notes."

CASE tools lacking

James Juracek, American Airlines' vice president of systems engineering for SABRE Computer Services, expressed his frustration at the lack of computer-aided software engineering (CASE) tools for open systems available from the proprietary systems vendors. "I think a lot of Sun Microsystems [as an open systems vendor]. They have the richest infrastructure and tool sets for supporting our application development effort," he said.

The massive SABRE system includes 24 IBM mainframes, 147 Digital Equipment Corp. minicomputers and 13,000 local-area networks spread across the globe. In 1988, the company began restructuring SABRE along client/server lines in its push toward open systems. During 1990-91, it brought 50 distributed applications on-line, including imaging, capacity planning, employee relations, pricing/yield management and airport management running on Unix, Hewlett-Packard Co.'s HP MPE, OS/2 and MS-DOS platforms.

Tom Vassos, AIX marketing programs manager at IBM Canada, defended IBM's commitment to open systems.

"In the last 24 months, we've clearly demonstrated that helping our customers move to open systems is where we want to be. We have provided AIX on IBM hardware from mainframe to desktop. We have announced complete integration of OSF DCE within SAA. As for CASE, there's no one vendor who can meet customer needs from top to bottom," Vassos said, pointing to how IBM teamed up with 20 other vendors to support the European Computer Manufacturers' Association CASE framework reference model.

On DEC's part, Bill Harris, Canadian manager of client/server and strategic technologies, cited his company's implementation of Distributed Computing Environment in both the VAX/VMS and Ultrix operating systems. He responded to criticism of the slowness of delivery of standards-based products by suggesting that such was the nature of the beast: "We have to make sure everything has been tested, tried and built solidly before we can release anything. We trade off quick innovation to bring out a quality product," he said.

Thomas Wheeler, senior staff consultant at American Express Travel Related Services Co.'s Advanced Technology Division and an architect of the the IBM 360, said he had no problems with vendors' responses to users' demands for standards.

"It's very important for users to dictate standards requirements to vendors. However, we have to remember that standards are a living, changing thing because technology is a living, changing thing," Wheeler said.

Ed Borkovsky, chief financial officer of UniForum and a longtime open systems consultant, suggested that downsizing has discouraged some vendors from greater involvement in customers' move to open systems: "A manufacturer of mainframes is not going to cooperate with any organization that has said it's not going to buy more mainframes."

Grantham is a Paris, Ontario-based writer.

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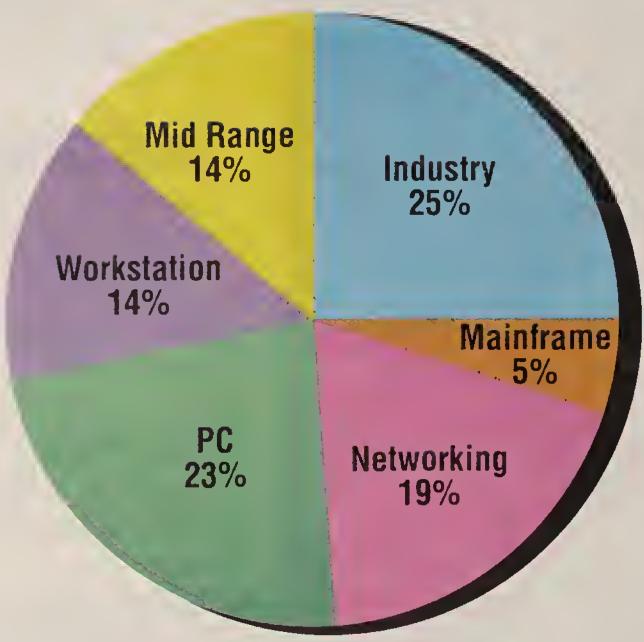

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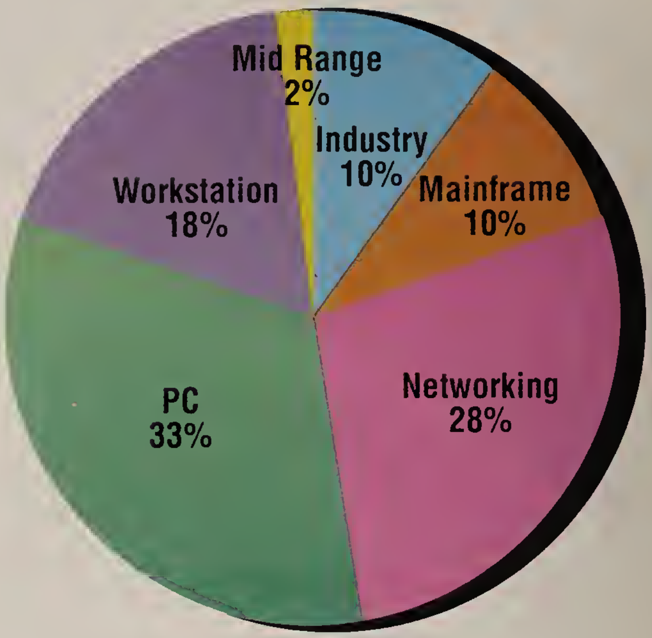

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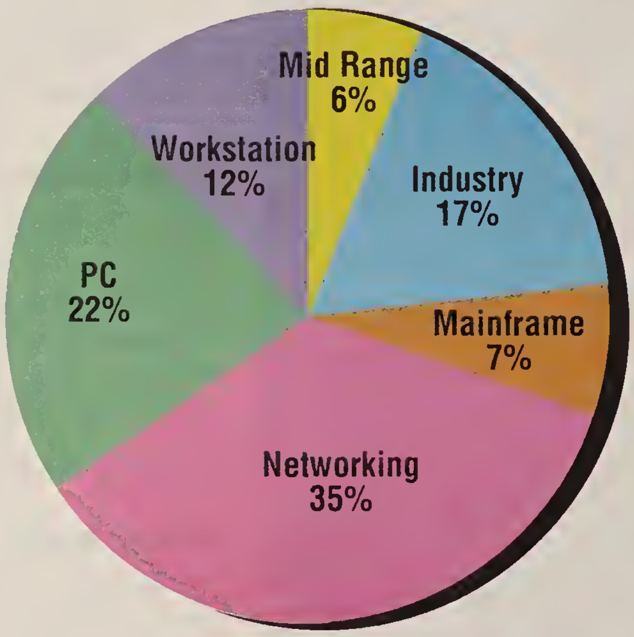

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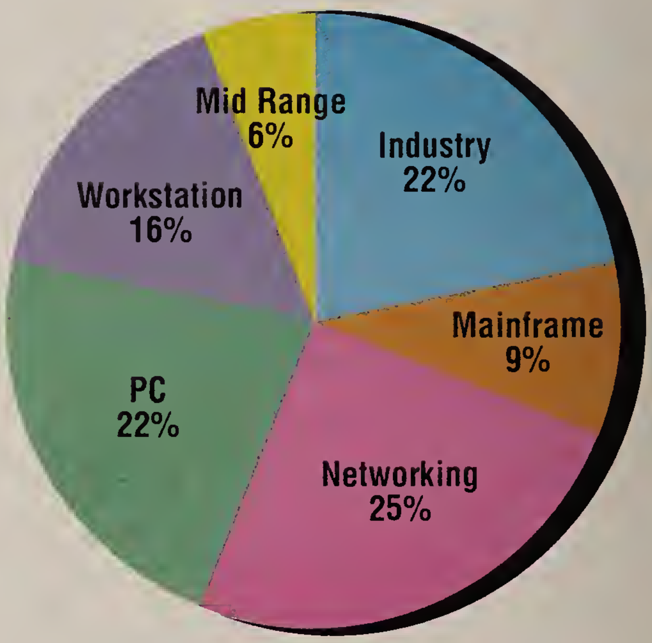

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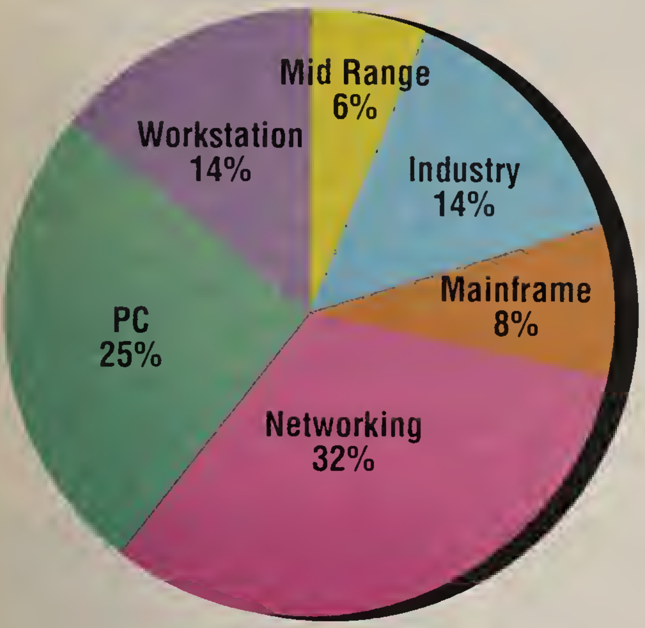

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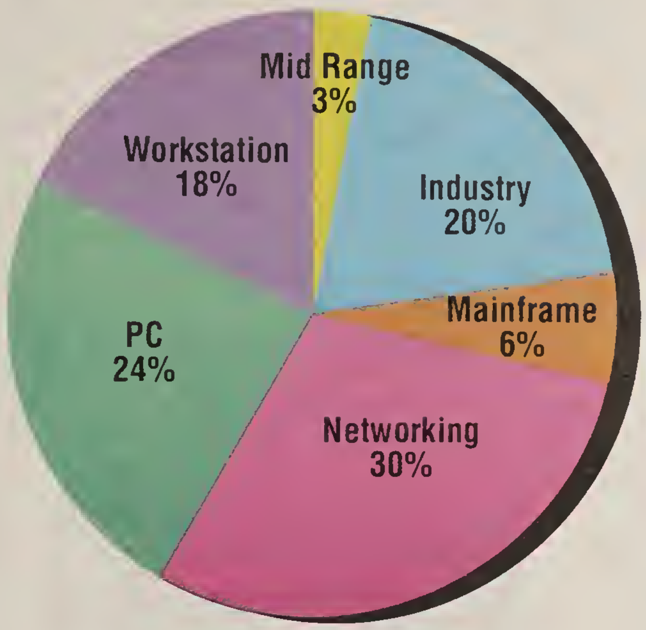

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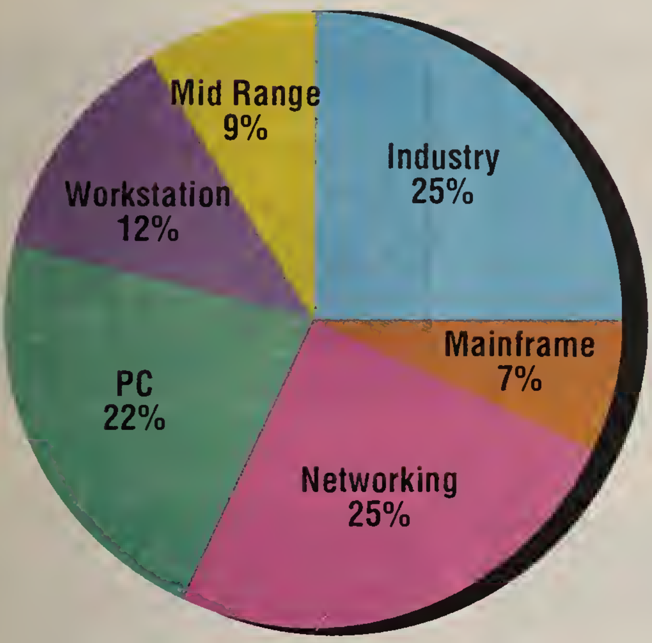

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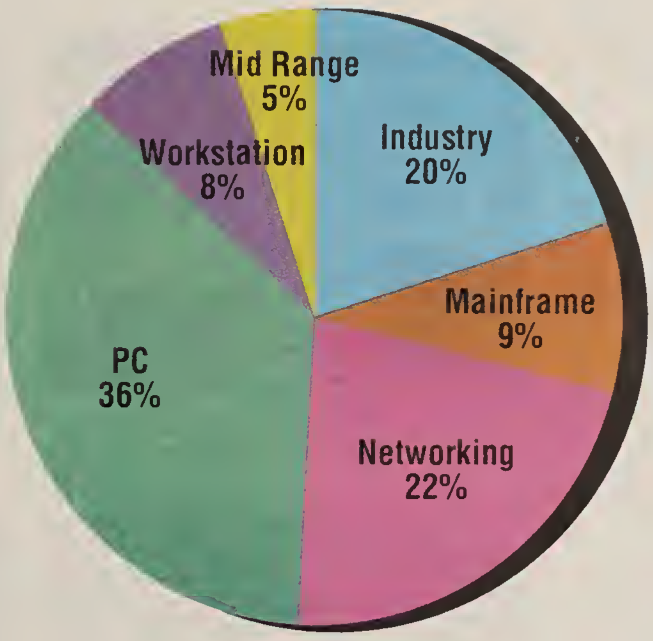

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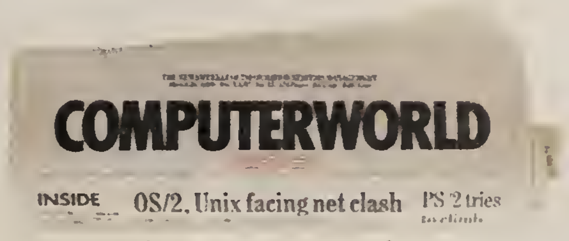


The Newspaper of IS

COMMENTARY

Jean S. Bozman

Users: Beware the benchmark!

"The only good benchmark is the customer's own benchmark of a production application."

Those words were spoken several years ago by a Tandem Computers executive who advocated running a full suite of real applications and production data when evaluating a new Tandem computer. Tandem is only too happy to let customers do that at its testing centers in Cupertino, Calif., and Frankfurt, Germany. Unfortunately, most users have neither the time nor the hundreds of thousands of dollars to conduct their own benchmarks.

One resource for them is the Transaction Processing Council (TPC), a nonprofit association of 40 systems vendors, software companies and large users that formulates and oversees comparative on-line transaction processor benchmarks.

Looking into the horse's mouth

The good news is that the TPC-A and TPC-B benchmarks, conducted on specified combinations of hardware and software, are well-documented and published. The bad news is that, like any other statistics, the TPC-A and TPC-B numbers have sometimes been taken out of context for marketing purposes. "If you take the numbers at face value, you're in trouble," one analyst said.

TPC-A and TPC-B results that show up in marketing campaigns are intended to prove product superiority by taking aim at competitors. In one such rivalry, DEC and Oracle have made claims and counterclaims about the relative performance of DEC's Rdb and Oracle's own database software as each new round of test results are published.

Last year, DEC published a report saying its TPC-B had reached the 300 trans./sec. mark on a four-way VAX; it later withdrew the results when asked by the council to retest the benchmark. Last March, Oracle announced even higher numbers for another VAX multiprocessor running then-new Oracle 6.2 parallel-server software.

Oracle later claimed to have run its own TPC-B tests on Rdb 4.0, using a paid consultant to monitor the results. DEC complained that Oracle's move was unfair because almost all of the benchmarks were done by the vendor of the product that was being tested.

This February, DEC was back again, this time showing a 193 trans./sec. result for a VAX 6560 running Rdb 4.1. Oracle has not yet responded publicly to those test results.

Benchmark bandying

This back-and-forth debate should raise a number of questions for users who are examining TPC results.

First, users must bear in mind that all results are optimal — the vendors test the software under ideal conditions. "Tuning the system and the database for these benchmarks is a time-consuming and expensive process," said Barry Needleman, analyst relations manager at DEC's database systems group. "All vendors will probably provide the best tuning for their own products."

Second, the attached documentation — which may run to 300 pages — must be studied carefully. "The reports are a wealth of information if you're willing to spend the time to study them," said Gordon Smith, manager of RDBMS marketing at Oracle. "For us, it's very revealing about the strengths and weaknesses of the other vendors' products."

> TPC-A AND TPC-B results that show up in marketing campaigns are intended to prove product superiority by taking aim at competitors.

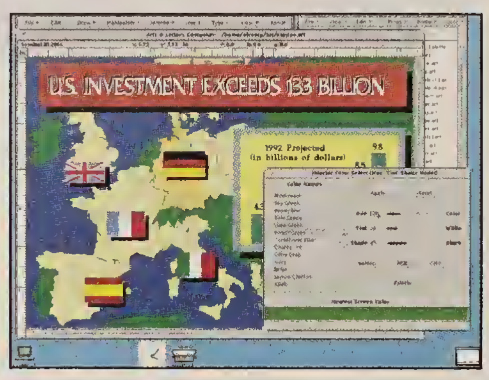
Third, users should recognize that there are many "missing" results from benchmarks that were slower than expected. So far, half of the council's 40 members have published benchmark results. The other half have not completed their tests or have elected not to publish their results. Still, a total of 120 benchmark results have been published for varying combinations of hardware and software.

To put the test results in context, users should ask for a complete listing of all TPC results. That way, they can spot groupings of price/performance, which is a quick way to shorten the list of products they wish to review. The results of specific tests are available for $20 from the San Jose, Calif.-based TPC.

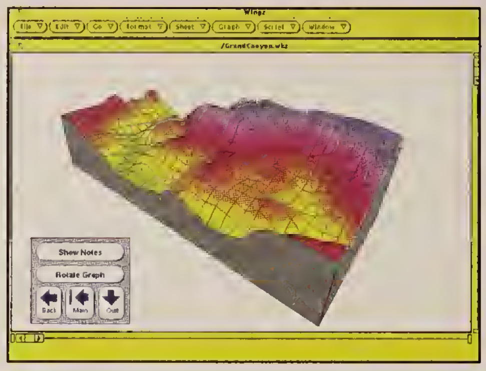
However, no one should expect his own work load to run at the same price/performance rating shown by the TPC benchmarks.

"These are peak-performance benchmarks a customer really wouldn't see in a day-to-day production environment," said Kim Shanley, who manages the TPC association.

Bozman is *Computerworld*'s West Coast senior editor.



ARTS AND LETTERS
Computer Support Corp.



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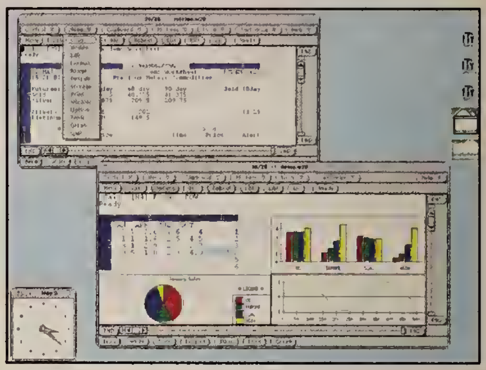
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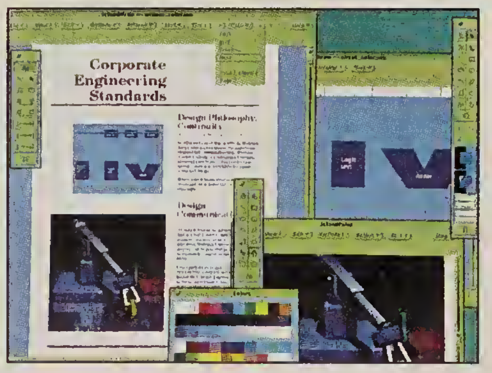
Computer Associates



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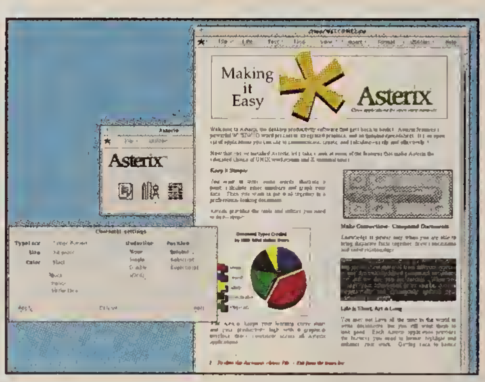

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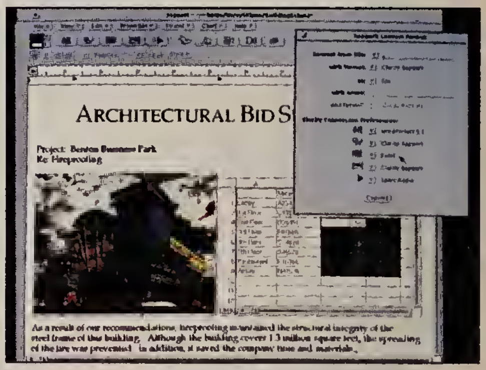
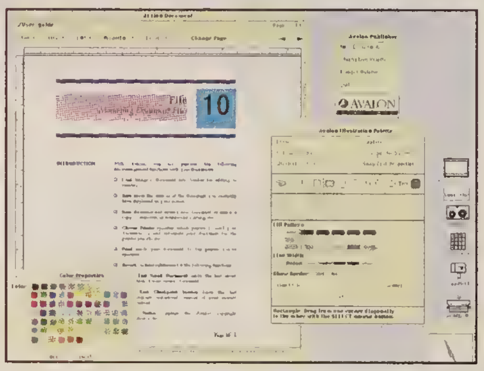
Applix, Inc.



RAPPORT
Clarity Software, Inc.



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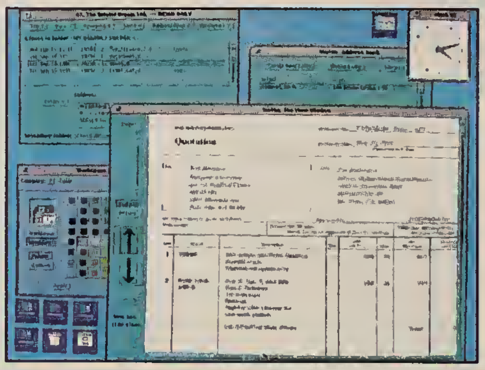

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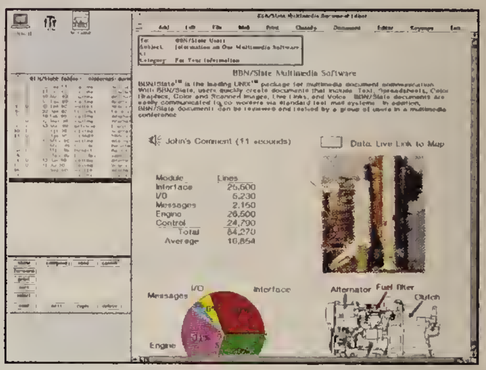

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BBN Software Products Corp.

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DEC outlines Alpha support program

BY SALLY CUSACK
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. has announced a service and support program for customers who want to migrate to DEC's future 64-bit reduced instruction set computing-based Alpha platforms.

The vendor said the new program will be divided into two categories: End-User Services for new customers and the installed customer base; and Vendor Services for OEMs, value-added resellers and third-party resellers.

The End-User Services program will offer client/server management, consulting services through education and training as well as integration and migration services.

The company will also establish 30 migration centers worldwide to assist customers in the Alpha migration. The centers will provide both pre- and postsales support, and they will offer services ranging from the initial benchmarking process to end-user consulting.

"The migration of architectures must be rather carefully managed," said William Sines, director of midrange systems and server research at Technology Investment Services Corp., a Framingham, Mass.-based research and consulting firm.

Sines predicted that DEC would provide users with analysis code on a program-by-program basis to determine the migration and recompilation process in moving from a proprietary VAX/VMS to an Alpha environment.

For vendors and third parties, DEC will announce a series of seminars and courses this month on the use of Alpha technologies. Pricing and availability of the services are quoted on request.

NEW PRODUCTS

Database management systems

BMC Software, Inc. has announced Opertune Version 1.1 for IBM's DB2.

Opertune allows dynamic modification of DB2 subsystems without interruption to end users.

It allows users to optimize system performance for batch and on-line processing, the company said. For example, buffer pool sizes and maximum number of threads can be changed without requiring a DB2 shutdown.

Pricing starts at $14,500 and depends on the central processor level.

BMC Software
Box 2002
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77487
(713) 240-8800

I/O devices

DSI, Inc., a division of Carlisle Systems Group, Inc., has announced DSI Print, a print module for the Freedom Controller intelligent disk storage subsystem.

The hardware and software module allows Unisys A series users to send files directly to a printer without intervention by the host system. According to the company, this process alleviates central processor overhead.

The print option costs approximately $20,000.

DSI has also introduced a small computer systems interface disk for Freedom Controller subsystems. Phase 3, with up to 1.3G bytes of capacity, is available for Unisys A and V series users.

DSI
1440 S. Lipan
Denver, Colo. 80223
(303) 778-2000

Unix software

Lucas Management Systems, Inc. has developed a Unix version of its Artemis Integrated Cost Schedule Control System (Artemis I/CSCS).

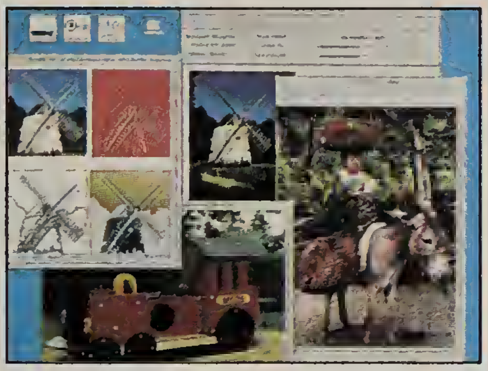
Artemis I/CSCS allows users to estimate, organize and analyze performance of multiple projects.

The I/CSCS Mini Version 2.6, also available on personal computers and Digital Equipment Corp. VAX/VMS systems, supports databases from Oracle Corp. and Ingres Products Division of The Ask Cos.

Pricing runs from $25,000 for one user to $170,000 for up to 50 users, according to the company.

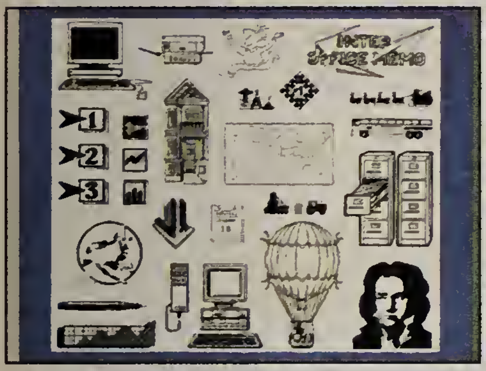
Lucas Management Systems
Suite 350
12701 Fair Lakes Circle
Fairfax, Va. 22033
(703) 222-1111

dBASE IV
Borland International, Inc.



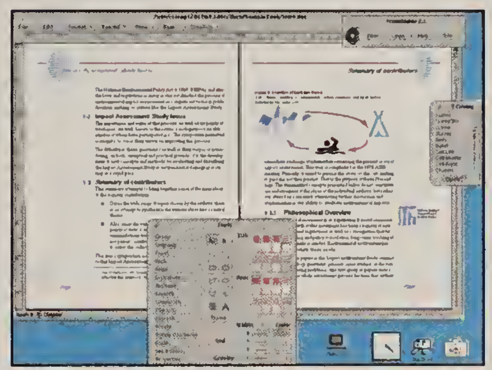
EASY-SCAN
Petronics Corp.

LOTUS 1-2-3
Lotus Development Corp.



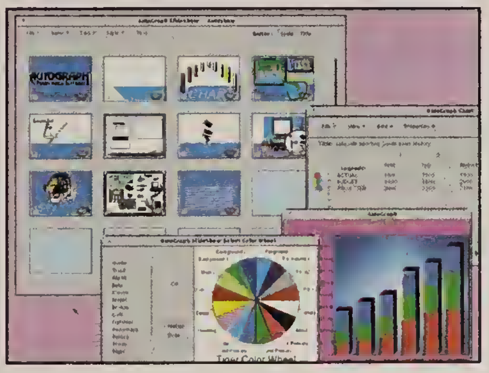
CLICKART
T/Maker Company

WORDPERFECT
WordPerfect Corp.



FRAMEMAKER
Frame Technology Corp.

GECKO MEETING
Gecko Software



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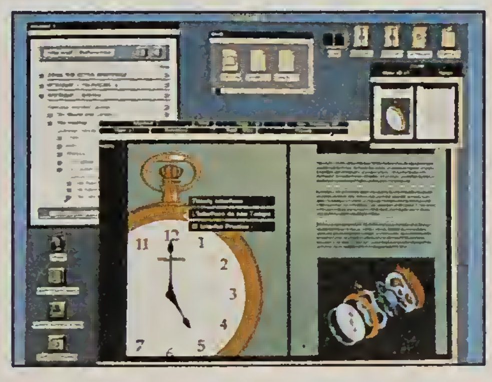
FICOR, Inc.



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APPLICATION DEVELOPMENT

CASE • LANGUAGES • TOOLS

IN BRIEF

CASE user group picks a president

■ The Chicago-based **Repository AD/Cycle International Users Group**, organized to keep information systems folks up to speed with the latest developments in IBM's evolving computer-aided software engineering (CASE)-oriented software initiative, has a new president: **Donnette Bruno**, who is also data administrator in information resource management at **Barnett Technologies, Inc.** Barnett Technologies provides operating and IS services to Barnett Banks, Inc.

■ Rockville, Md.-based CASE tool vendor **Intersolv, Inc.** earlier this month posted income up 500% to $2 million on revenue that increased 5% to $21.6 million for its fiscal third quarter ended Jan. 31. Solid boosts in revenue from two products, APS and PVCS, helped fuel the favorable comparison, President and Chief Executive Officer Kevin Burns said. Intersolv also restated its financial results for its first two quarters to correct an error made in research and development calculation. As restated, first-quarter profits jumped from $195,000 to $486,000, while second-quarter net income increased from $1 million to $1.2 million.

■ **Amdahl Corp.** and Sunnyvale, Calif.-based **Software One** signed a pact aimed at wedding a slew of leading front-end, or "upper-CASE," tools to Amdahl's Huron applications development and production environment. Under the agreement, effective in the third quarter of this year, Software One will expand its Exchange gateway software by offering an open interface that will allow users to transfer data directly from proprietary upper-CASE tools.

Development centers shift focus to PCs

ANALYSIS

BY JOHANNA AMBROSIO
and KIM S. NASH
CW STAFF

The development center has come a long way from its inception a decade ago. The tiny information systems subdepartment that once provided technical support and methodology for mainframe programmers is changing to keep up with the influx of personal computer tools.

Basically, the development center is a handful of IS personnel brought together "to look at the process of building applications through the use of tools," said Dennis Farley, president of the Development Center Institute in Indianapolis.

A simpler definition, offered by Vaughan Merlyn, a partner at Boston-based Ernst & Young, is "an IS shop for the IS shop."

Downsizing a factor

Although such centers are not the rule — there are drawbacks, and downsizing can eliminate the need for them altogether — about 20% to 30% of large IS shops use some takeoff on the idea, which came out of IBM Canada in the early 1980s, Farley said. Exact use is hard to track, he added, because different users call it by different names, including the development support group and the productivity center.

Farley said his institute's membership roll of 1,000 individuals has been "pretty stable."

"We used to focus all our attention on the mainframe. Now 80% of new development is for PC LANs," said Ron Gualtieri, who oversees EG&G Florida, Inc.'s center. Farley agreed. "Everything is going toward the workstation," he said.

Besides shifting focus from mainframe development to smaller machines, productivity centers have also become more tightly linked with the company's business units in recent years, observers said. The groups now provide a central resource for people who need to write applications — be they sophisticated end users or programmers dedicated to a particular business function.

One professional who has seen this change firsthand is Patricia Seymour, who until November 1991 worked in the reengineering area at Pacific Bell in San Francisco. She now heads her own consulting firm, Technology Innovations, in Danville, Calif.

Applications control

The development center and what it does

- Examines and tests applications development tools.
- Deploys the tools to the programmers.
- Trains and supports programmers.
- Introduces methodologies for development.
- Measures and tracks productivity improvements.

CW Chart: Michael Siggins

When PC development tools started coming in at PacBell, Seymour recalled, the company instituted a policy that gave every tool an internal "product manager" responsible for the tool's trial, acquisition, deployment and budgeting. "We had separate workbenches for everything," she said. "Around the time I left, we were setting up everything in one laboratory to offer it all in one place."

The lab is mostly complete, said Steve Avellar, a senior programmer at PacBell. "We're still refining it, but it's open, and people are using it."

The idea is to provide end users and programmers with one central resource where they can

Continued on page 66

Tool-testing team

Head count varies at EG&G Florida's development center, but tools for application building have rolled out steadily since the group was formed in 1987.

The nine-member team is charged not only with evaluating and disseminating traditional programming tools, such as compilers and fourth-generation languages, but also with implementing "any new technology that helps developers get user needs met," said Ron Gualtieri, computer scientist and group leader.

For instance, in addition to piloting computer-aided software engineering and joint application development projects, EG&G is currently deploying Microsoft Corp. Windows and adding to its collection of imaging stations.

"Users want these technologies, so [programmers] have to know how to implement them. But we learned along the way [that] they can speed up our software development process, too," Gualtieri said.

EG&G is in the last leg of a project to put all of its 120 programmer/analysts on networked PCs equipped with Windows. The interface lets developers compile in the background and edit code in the foreground, for example, and "click away for anything they need to do, instead of exiting one tool to get to another," Gualtieri explained.

The development center has changed during the last five years at EG&G, which provides computer systems, security and other technical services to Kennedy Space Center in Cocoa, Fla.

Gualtieri said his group originally took a "closed door" approach to tool evaluation, meaning that team members would pilot products in a controlled, private environment, then foist them off onto programmers.

Now, cooperation reigns. Gualtieri said the development center works closely with programmers and end users, which results in "development going more smoothly and software getting out there much faster."

He said the company has no formal systems in place for measuring development center efficacy but relies on gut feeling.

Early on, when programmers had no say in which tools they could use, they "seemed to want to make the tool fail. There was resistance," Gualtieri said.

But that has changed. "When programmers have some responsibility for helping us decide on products, they are more committed to making the tools succeed," he said.

KIM S. NASH

Prime eyes open systems with port of Pick DBMS

BY KIM S. NASH
CW STAFF

NATICK, Mass. — In a bid to strengthen its open systems hand, Prime Computer, Inc. said it will port its Pick-based database/application development system to various forms of Unix.

PI/open, as the new product descendant from Prime Information will be named, is scheduled to ship later this month for Hewlett-Packard Co. HP 9000 Series 800, Mips Computer Systems, Inc. Mips RC and Prime EXL 7000 series workstations.

PI/open is the "centerpiece" of Prime's future open systems push, said Andrew Ridgers, director of Prime Information and UK engineering.

"It's a change in strategy" for Prime, Ridgers said.

Until now, PI/Plus, the Unix version of Prime Information, ran only on Prime's own Unix machines. Ultimately, Prime plans to port the new database to IBM RISC System/6000, Digital Equipment Corp.'s 5000 series and all SunOS-based platforms from Sun Microsystems, Inc. PI/Plus users will be able to upgrade to PI/open for free, according to Ridgers.

Revenue safe

Providing a path for users to migrate from Prime's proprietary 50 Series machines to Unix platforms will not impinge on the company's revenue, Ridgers said.

"We're not giving them an opportunity they don't already have through third parties," he explained.

Other minicomputer vendors have taken the same tack, including Wang Laboratories, Inc., which announced last summer that it would port its application-building environment to Unix, starting with IBM RS/6000. The AIX version of Pace is due out sometime this year, according to Wang officials.

Pricing for PI/open starts at $435 per seat.

Development centers shift focus to PCs

CONTINUED FROM PAGE 65

find out about development methodologies and tools, as well as use the tools themselves.

A few drawbacks have deterred companies from the development center concept, observers said. Although it centralizes resources and procures favorable prices because the center buys in bulk for everyone, "the downside is that the one tool set may not be the best choice for every single project," said Eric Aranow, president of CASElode Consulting in Belmont, Mass. He also said that the resulting tool set can easily become "three or four years behind the state of the art."

The staff and monetary overhead needed to set up and run an effective support group is another stumbling block. "It's an infrastructure issue, and IS has been very loathe to invest in overhead," Merlyn said. "Basically, you're saying to take the best developers and project leaders and put them into support. It seems counterintuitive."

Furthermore, some groups become overly technical and, instead of supporting programmers and end users, actually start to develop the applications themselves. "It requires careful management and attention," Farley said.

It works for some

Still, some development centers seem to have overcome these obstacles and are changing with the times. For example, Bankers Trust Co. has meshed the concept to its decentralized IS philosophy. A handful of developers at the New York-based bank devote half their time to assessing tools and laying down methodology, according to Michael Packer, senior vice president of strategic planning.

Actual software development occurs in each of the 25 to 30 business units, but "we administer to those field units," Packer said. The group also handles human resources, financial planning and standards-setting for technologists bankwide.

"We believe in moving application development out to units — and end users — where we can," Packer added. For example, the group recently rolled out Lotus Development Corp.'s Notes for users to build their own simple systems.

The development center may be one way that increasing numbers of IS shops can "empower users to do more work themselves," said Aaron Zornes, an analyst at Meta Group, Inc. in Westport, Conn.

Tool generator for AS/400 nears debut

BY SALLY CUSACK
CW STAFF

LARKSPUR, Calif. — Synon Corp. has announced that its client/server application generator for the IBM Application System/400 midrange system will be available to customers in August 1992.

The software, dubbed Synon/Client Server Generator (CSG), will enable users to generate client/server applications using an AS/400 as the server with any number of client IBM Personal System/2s attached via Token Ring or twin-axial cable.

According to John de Wit, vice president of marketing at Synon, applications that are generated using Synon/CSG will result in a true distributed function implementation — and will go beyond providing simply a front-end, graphical user interface and display functions.

Users will have database access and manipulation functions on the AS/400 and user interface and information processing functions residing on the PS/2 client.

Beta testing is scheduled to begin in June, and the generator will cost between $24,000 and $37,000.

Drivers for the program will be priced between $4,000 and $25,000.

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NEW PRODUCTS

Compilers

NetMake, a tool for compiling large programs in parallel over a Unix network, has been announced by Aggregate Computing, Inc.

NetMake breaks code into individual routines and sends them to be compiled on various machines, the company explained. The compiled routines are then collected and linked on a single workstation.

NetMake automatically detects and utilizes idle systems on the network.

A single copy costs $1,400. Five copies cost $5,000.

Aggregate Computing
Suite 125
5217 Wayzata Blvd.
Minneapolis, Minn. 55416
(612) 546-5579

Digital Equipment Corp. has announced a Fortran compiler that automatically optimizes code for massively parallel architectures.

The product, DECmpp Fortran, runs on DECmpp 12000 series systems. It automatically divides programs into parallel and scalar components, allowing up to 16,384 processors to work simultaneously toward a solution.

An unlimited-user license costs $11,800.

DEC
146 Main St.
Maynard, Mass. 01754
(508) 493-6767

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Development tools

Gimpel Software has announced the release of Version 5.0 of Flexelint, its C language source code analysis tool.

The software product analyzes C language programs, looking across multiple modules for bugs, inconsistencies and redundancies. The revision includes a user-controlled Strong Type checking facility and a control-flow-based analysis of variable initialization. It also adds 80 new diagnostic messages.

Flexelint 5.0 runs on operating systems including Unix, VMS and MVS. Pricing ranges from $798 per Unix workstation license to $5,000 for a single CPU mainframe license.

Gimpel Software
3207 Hogarth Lane
Collegeville, Pa. 19426
(215) 584-4261

The Frustrum Group, Inc. has announced Transportal Pro 2.0.

Transportal Pro users can develop personal computer interfaces for client/server applications using familiar languages, the company said. Version 2.0 supports Microsoft Corp.'s Visual Basic running under Windows 3.0, along with other languages, including Microsoft C and Borland International, Inc.'s C++ and dBase IV. The product communicates with mainframes via standard 3270 emulation products.

The development system costs $1,495.

The Frustrum Group
Suite 1700
122 E. 42nd St.
New York, N.Y. 10168
(212) 984-0760

Database management systems

Trifox, Inc. has announced Vortex, a line of software products for heterogeneous client/server and host-based environments.

The line includes Vortex Accelerator, a query performance optimizer for multiuser database applications; Vortex Interface, which provides communications with multiple data managers and network protocols, including Transmission Control Protocol/Internet Protocol, NetBIOS and X.25; and Vortex Compilers, a set of compilers for third- and fourth-generation languages that allow applications to access the other Vortex products.

Currently, support is offered for databases from Oracle Corp., Informix Corp., Sybase, Inc. and other major vendors, along with VMS and a variety of Unix variant operating systems.

Pricing ranges from $5,000 to $100,000.

Trifox
2600 Campus Drive
San Mateo, Calif. 94403
(415) 513-5900

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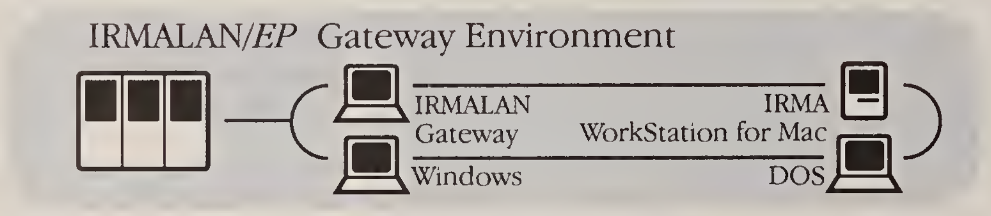
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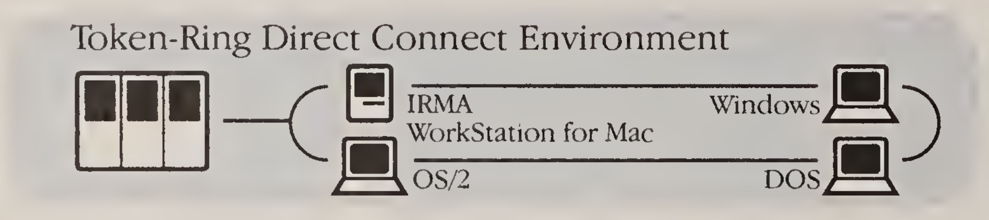
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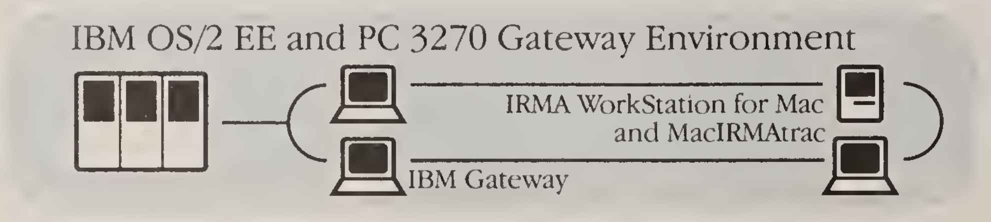
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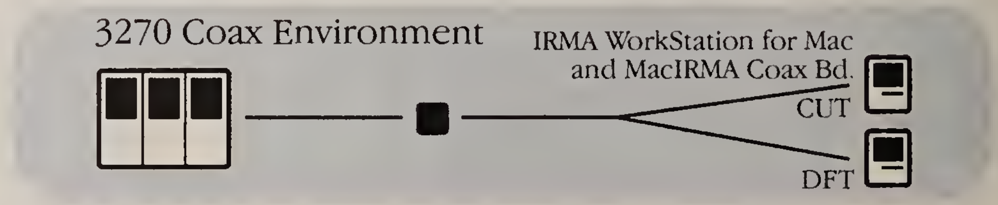
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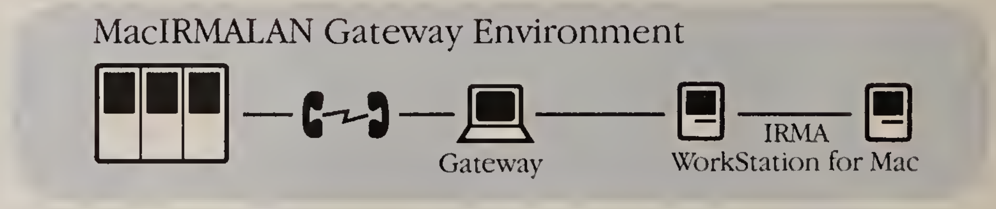
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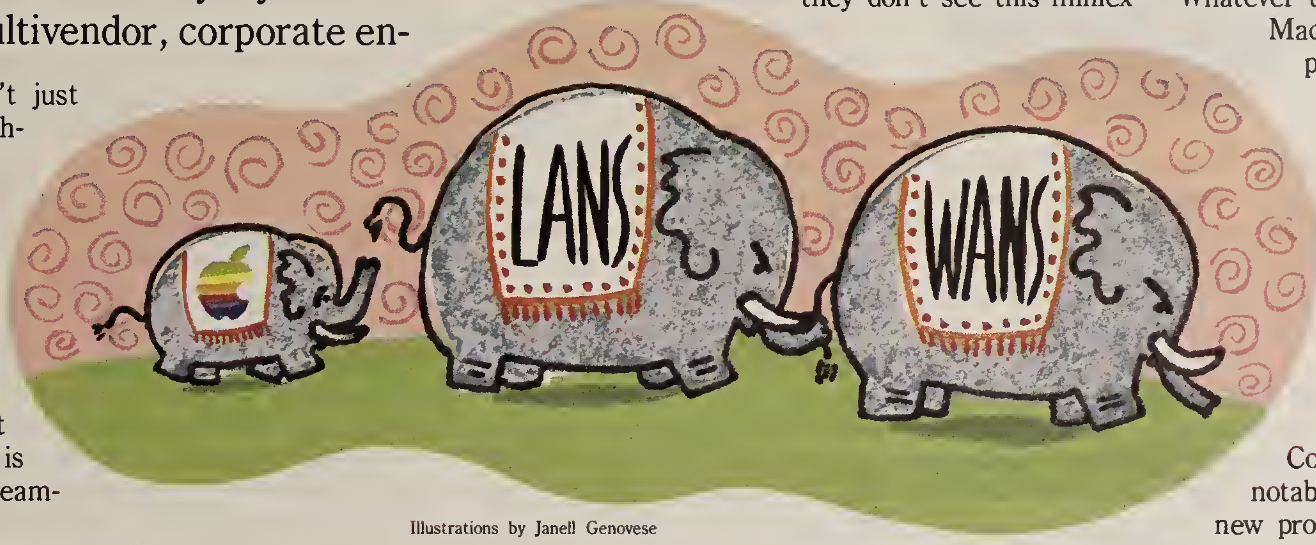
INTEGRATION STRATEGIES

Mac network acceptance slow but steady

BY MARK MEHLER
SPECIAL TO CW

Hard feelings die hard. That's a big reason why Apple Computer, Inc. — despite a recent surge in networking product innovation, blockbuster technology alliances and growing ties to the integrator community — still has a long way to go to make the Macintosh an everyday fixture in enterprisewide, multivendor, corporate environments. "You can't just take seven years of bashing the PC and make believe it didn't happen," says Leo Spiegel, executive vice president of Lan Systems, Inc., a San Diego-based network integrator. "A lot of people still aren't convinced that Apple is ready to embrace a teamwork concept."



Illustrations by Janell Genovese

Last year's ground-breaking IBM/Apple alliance may change some people's minds about Macintosh's potential as a serious part of corporate networking.

As a result of the much-ballyhooed deal, more companies seemed open to welcoming in Macintoshes, joining the host of universities, public agencies and other early adopters on the cutting edge of Macintosh integration (see story page 71).

Even so, in many parts of corporate America, the Macintosh is still viewed with some suspicion, though it is lessening.

Numbers tell both sides of the story. In 1991, growth in Macintosh worldwide unit sales far outpaced the overall market, rising nearly 30% to $1.9 billion, according to Workgroup Technologies, Inc. in Hampton, N.H. That represents a 10% share of the desktop.

More importantly, the percentage of Macintoshes in heterogeneous network environments, now about 1% to 2%, should grow to about 8% to 9% by the middle of the decade, according to Workgroup Technologies senior analyst Bill Clinton. Overall, the number of Macintoshes in networks, estimated by Workgroup Technologies to be 67% in 1990, is expected to rise to 82% in 1993.

Nevertheless, analysts say they don't see this miniexplosion in Macintosh enterprise networking translating directly to market share growth.

The Macintosh "is still a more expensive, proprietary system in an era of cost-cutting and open systems," says Nancy McSharry, a desktop analyst at International Data Corp. (IDC) in Framingham, Mass.

While Workgroup Technologies envisions Apple's share of the market holding steady at about 9% through 1995, IDC is slightly less upbeat. The firm projects that the Macintosh operating system's worldwide share will increase from 7.3% in 1991 to a modest 8.5% by 1995.

"I don't think anything coming from the IBM alliance is going to significantly change that," McSharry says. "Consortiums don't sell products; companies do."

Alliances lauded

Whatever the long-term fate of the Macintosh in enterprise computing, many customers, independent software vendors, systems integrators and consultants give Apple extremely high marks for team play.

They point to Apple's four-year success record in connecting the Macintosh to Digital Equipment Corp. VAX systems. Also notable, they say, is a raft of new products and enhancements designed to promote connectivity between Macintosh and personal computer local-area networks, Systems Network Architecture, Ethernet and Token Ring backbones and a range of protocols, including Transmission Control Protocol/Internet Protocol.

Moreover, observers note, substantial progress is being made in addressing both the lack of applications software that runs on the Macintosh and PC platforms and the limitations

Continued on page 70

Georgia Tech tames unlinked net for 20% increase in uptime

INTEGRATING MACINTOSHES

Georgia Institute of Technology

BY ARIELLE EMMETT
SPECIAL TO CW

The Georgia Institute of Technology has tackled the Herculean task of taming a hydra-headed, 6,000-node network by fusing separate trunks of Unix and Apple Computer, Inc. Macintosh computers.

Integrating the two formerly unlinked networks into one Ethernet has yielded many benefits, according to Scott Parker, a Macintosh expert and research engineer in university network services.

Among the payoffs, he says, are more reliable communications between the Macintosh and Unix-based Sequent Computer Systems, Inc. S81 "Hydra" campus mainframes, print sharing by Macintosh and Unix users, Macintosh access to a Transmission Control Protocol/Internet Protocol (TCP/IP)-based mail system using native software and a 20% increase in network uptime.

The project, which began in 1990 and continues to evolve, is the culmination of nearly a decade of network growth at the 107-year-old school based in Atlanta.

Since the mid-1980s, more than 200 Macintoshes have sprung up on the 12,000-student campus. But the main university network — which connected Sun Microsystems, Inc. Sun-3 workstations, IBM Personal Computers, Digital Equipment Corp. VAX/780s, a Pyramid Technology Corp. 90X Unix mainframe and a pair of AT&T 3B20s — was linked over Ethernet using TCP/IP.

Rob Nelson

Georgia Tech's Parker: *'We had all the technical knowledge we needed'*

"Most of the Macs were on isolated LocalTalk networks that weren't connected to the campus network," Parker explains.

Campus users in both Atlanta and Smyrna, Ga., wanted universal, Unix-based electronic mail, PC-to-mainframe connection and mainframe file and printer sharing.

When free accounts on a Sequent Hydra were made available to students and faculty by the university's office of computing services, "The question became, 'How do I get into Unix?' " Parker says. "The answer

Continued on page 73

Mac net acceptance slow but steady

CONTINUED FROM PAGE 69

of the Macintosh as a database development environment.

Finally, observers say that although System 7.0 may have been slow to market, it is loaded with robust networking features. Among them are personal file sharing, which eliminates the need for a central file server, and publish and subscribe, an enhanced cut-and-paste function.

"From a technology standpoint, the [prospects for] Mac integration are better today than ever," says David Gonzales, a networking consultant at integrator Phoenix Systems, Inc.

The implementation of the Macintosh on Novell, Inc. NetWare 3.11 allowed the Anacostia Naval Station in Washington, D.C., to undertake a recent integration job. The project, handled by Phoenix Systems, involves converting a library of military photographs to a digital format using Macintoshes and running the database on a PC LAN. The system encompasses 10 Macintosh IIfx machines — being upgraded to the new Quadra on an Ethernet network — and 15 PCs.

"We'd love to manage the database on the Mac, but you need a more powerful DOS workstation," Gonzales explains. "We know it will be a long while before we see the development of a new processor [out of the IBM alliance] . . . but in the meantime, we have the capability of marrying the two LANs."

That perception thing

Despite such advances, many information systems managers and integrators are still wary of the Macintosh and are hesitant to link it to enterprise networks.

Mike Burdick, a senior consultant at CGI Systems, Inc., a Berwyn, Pa.-based integrator that participates in a pilot networking services partnership with Apple and Bell Atlantic Corp., says purchasers still see the Macintosh as "too much fun" for corporate environments. "There is a lot of bigotry in the industry," Burdick adds. "Corporations are afraid of the Mac because of the lack of competition."

Jim Groff, senior director of marketing at Apple's Cupertino, Calif.-based Enterprise Systems Division, acknowledges a cultural lag. "Reality is generally ahead of perception," he says. "To some customers, we're still the 1986-1987 Apple, making niched, high-margin, personal productivity machines for desktop publishing but not serious business machines."

Groff insists, however, that Apple's 18-month-old change in strategic direction has drawn the interest of blue-chip customers. "They may not be quite sure what it's all about, but they are listening."

In fact, Apple and various integrators and partners are working to evangelize all who will listen. John Rees, manager of KPMG Exis, a joint integration venture of Apple and KPMG Peat Marwick, says he sees the Macintosh as a superb front end for the development of custom applications.

Exis Corp., one of Apple's three preferred high-end integration partners — along with Andersen Consulting and Electronic Data Systems Corp. — is at work for 10 clients on a range of downsizing projects, some of which involve Exis' Macintosh decision-support system modeling tool for viewing data in multiple dimensions.

"Apple has done a great job of creating connectivity standards that enhance integration," Rees says.

Many users are looking forward to running their DOS PCs on AppleTalk, one of the networking goals envisioned in last year's IBM/Apple alliance.

"Certainly IBM, for example, could have put AppleTalk protocols into OS/2 without licensing the source code from us," Groff notes. "But this will make the entire process happen a lot faster. Under the agreement, you can expect to see something new every quarter." (See story page 72.)

Tomorrow looks bright

The future, of course, holds the promise of a new open systems environment drawing on IBM's AIX and Apple's A/UX and running on a new family of reduced instruction set computing processors.

PURCHASERS STILL see the Macintosh as "too much fun" for corporate environments.

So far, probably the two biggest technological impediments to heterogeneous networking are poor applications support and lack of enthusiasm for the Macintosh as a development environment, observers say.

"The whole database and groupware thing remains a problem for [Apple]," Lan Systems' Spiegel says.

"Again, we're talking about perception being at odds with reality," Groff says. "There is [no shortage] of Mac workgroup applications. . . . How many Notes users are there?"

Meanwhile, most major spreadsheet, word processing and electronic-mail products now run in both the PC and Macintosh worlds.

Apple executives and most of their third-party allies say they see marketing, sales, distribution and support as the real networking challenges of the 1990s.

"I worked on one recent engagement with a Fortune 500 account that kicked Apple out," says an integrator who asked to remain anonymous. "Basically, the Apple sales rep wants to push off the support on the dealer channel. . . . Apple has a continuing problem with support."

Moreover, the vendor's efforts to broaden its channels program to include large systems integrators, consultants and networking specialists are also progressing slowly, at least on the commercial side. Nonetheless, Apple continues to work on getting its house in order.

"We simply have to do more work to increase awareness," says Greg Shuk, director of Apple's Federal Systems Group. "Too few information resource managers understand the Mac." •

Mehler is a free-lance writer based in Jackson Heights, N.Y.

Macintosh networking just keeps getting easier

Users who have embraced the Macintosh in their networking schemes say it's not as tough as it sounds and that the payoffs are worth it.

Companies say efforts have been aided both by new integration tools that permit easy access to mainframes and by the bridging of AppleTalk to Token Ring and Ethernet backbones.

Loral Infrared & Imaging Systems, Inc. in Lexington, Mass., has connected almost 300 Macintoshes to a network that includes a DEC MicroVAX 3100 and VAX 4000 systems as well as Sun's SPARCstation IPC/IPXs and Hewlett-Packard Co. Apollo Division computer-aided design workstations.

"We had a LocalTalk net, and it just ballooned," Loral network manager Claude Corbeil says. "The traffic was horrendous."

The company decided to bridge existing Macintosh and DEC networks, which handled work stream and manufacturing functions. Four MultiPort Gateways from Webster Computer Corp. were installed. The $2,900 devices combine a four-port AppleTalk router and an AppleTalk/LocalTalk-to-Ethernet gateway, enabling Macintosh users to share files, databases and peripherals stored on an Ethernet-based TCP/IP host.

"The reliability of transmissions [has made] a huge jump," Corbeil says. "Before, things were very unreliable. Now, we pull down stats from the Ethernet backbone and are getting a 0.1% collisions rate.

"Except for design, where we'll be running SPARCs, we will be a Mac house," he adds.

Reuters News Service last month completed a six-month beta-test project that uses SimVision, Simware, Inc.'s new Macintosh front end to IBM's Professional Office System E-mail system.

Adrian Kole, Reuters vice president of information systems and administration, says the new software provides a friendly Macintosh interface and lets users compose, edit and communicate with the host off line. This substantially reduces mainframe connect costs and frees up disk space, he says.

"Right now, [Macintosh] hardware connectivity is a nonissue," says Kole, whose company has about 60 Macintoshes. "For Apple, the No. 1 issue is taking the full power of the desktop and making it work in conjunction with mainframe applications."

Vessels Oil & Gas, Inc., a Denver-based exploration and fuel production company, has integrated a network of 32 Macintoshes and 7 PCs to an Application System/400 via terminal emulation.

Patricia Barry Levy

Vessels Oil & Gas' Wieck: *'I have always been impressed by Apple's commitment to networking'*

"I have always been impressed by Apple's commitment to networking and the standards they've put in place, which you don't see in the PC world," says Kelly Wieck, data processing manager. He says Apple's new server software lets the company swap out compact discs without having to power down the server.

"Now we use CDs for archiving, for example," Wieck adds. "The changes Apple made on System 7.0 are tremendous."

The project cost about $200,000 and took about two months to complete last spring, says Wieck, who adds that the benefits have been "tremendous."

"We've created a more flexible and more responsible desktop. . . . But the major benefit is not having to share word processing and spreadsheets on the central VAX," Wieck notes.

MARK MEHLER

eminder That We've

Apple switches channels to boost star potential, integration of Macintosh

BY MARK MEHLER
SPECIAL TO CW

Apple Computer, Inc. is building an infrastructure company officials say will make it easier to integrate the Macintosh and thus boost corporate acceptance.

The firm's companywide integration program encompasses three major groups:

- The Integrated Systems Group, a Cupertino, Calif.-based field organization looking to broker deals with integrators, prototype projects and provide proof of concept.
- Complex Systems, Inc., which performs similar functions for Apple's Federal Systems Group.
- Solutions Channel Development Division, a 7-month-old unit charged with putting together programs for Apple's big integration partners and more than 1,000 smaller integrators, nonselling consultants and value-added resellers.

Mike Burdick, a senior consultant at CGI Systems, Inc., says he sees the moves as an indication that Apple has finally realized that its traditional dealer network cannot handle all the large, complex integration required under the Macintosh's new, broader charter.

Jeff Stevens, a partner at Connexus, a Brookfield, Conn., member of the Apple Consultant Relations program, says Apple has helped his small networking specialist firm land business through its consultant directory.

"We finally see some direction coming out of Cupertino," Stevens says. "Information is constantly going out to us on marketing opportunities."

Connexus' Macintosh-related engagements include work for the New York Stock Exchange, Olin Corp. and Aluminum Company of America.

But early going may be slow: CGI, Apple and Bell Atlantic Corp. have set up a new services partnership to do network design and implementation for East Coast corporations. But so far, the team has identified only one client: Nolan, Norton & Co.

Burdick says it has taken months simply to define the partnership and design the right programs. The partners now face the more daunting task of identifying the corporate decision makers and finding programmers and project managers fluent in both IBM-compatible networks and the Macintosh.

"We have yet to get the attention of people making [enterprise] computing decisions," Burdick laments. "Also, while we can find people adept at hooking up [Macintoshes and PCs], when it comes to solving problems, experienced technical people are scarce."

In Apple's government business, partnerships with third-party service providers are at a somewhat more advanced stage.

Tying the knot

In Apple's Federal Systems Group, the Complex Systems unit has forged alliances with Electronic Data Systems Corp., Lockheed Corp., Loral Corp. and Bull HN Information Systems, Inc. EDS is currently working with Apple Federal on contracts for NASA and the CIA.

"In the government area, although our market penetration is about the same as in the commercial world, we benefit from the stronger momentum behind open systems," Apple Federal director Greg Shuk says.

"A big issue with our customers is adherence to data and networking standards, and that is our strength," he adds.

Shuk says that despite tremendous investments in IBM architectures, large agencies such as the U.S. Department of Justice and the U.S. Army now appear more willing to consider new open systems options. •

Mac connectivity products abound

A host of connectivity products designed to link Macintoshes to corporate environments have appeared during the past 12 months.

▶**A new 16M-byte Token Ring card,** IBM certification of the Snaps gateway and the announcement of IBM's new router supporting Systems Network Architecture (SNA), Novell, Inc.'s NetWare, Transmission Control Protocol/Internet Protocol and AppleTalk.

▶**The availability of the Macintosh on Novell's NetWare 3.11,** allowing Macintosh workstations to exchange files, transmit electronic mail and share other applications with DOS, Windows, OS/2 and Unix platforms.

▶**Apple's own SQL-based Data Access Language (DAL),** which gives developers access to all leading relational database management systems on non-Macintosh clients.

▶**Apple's Snaps gateway,** the linchpin of its SNA connectivity strategy.

▶**The availability of 16M-byte Token Ring cards** for AppleTalk networks and a proliferation of Macintosh-to-host software emulation packages from vendors such as Digital Communications Associates, Inc., Avatar Corp. and Cayman Systems, Inc.

▶**Due soon:** AppleTalk support for OS/2, integration of the Macintosh into NetView and the implementation of DAL for the IBM Application System/400.

Georgia Tech tames unlinked network

CONTINUED FROM PAGE 69

was, ‘Get yourself connected to Ethernet.’ ”

The university decided to handle the systems integration itself. “We had all the technical knowledge we needed,” Parker explains. “It was also difficult [to outsource] because of the university contract mechanisms.”

Like many universities, Georgia Tech had been evolving since the 1980s to a highly distributed, client/server-based architecture. So any new approach would need to fit with existing client-based software, interfaces and network applications.

By 1990, Georgia Tech had completed what Donald Alexander, manager of facilities engineering, calls “one of the largest university fiber projects in the country.” Nearly 5,000 users were linked.

“The need for electronic mail opened our eyes,” Parker recalls. “E-mail pushed people to learn how to use the network” more efficiently.

CLOSE-UP

- **Organization:** Georgia Institute of Technology.
- **Goal:** Link 200 Macintoshes to the institute's 6,000-node network to improve information sharing.
- **Strategy:** Create a bidirectional Macintosh-to-Unix link on Ethernet.
- **Payoff:** Better communications between the Macintosh and Unix-based campus mainframes, print sharing by Macintosh and Unix users, 20% increase in network uptime.

Unix-to-Macintosh integration was the next logical step. But to accommodate this, the networking staff needed to adopt a client/server architecture.

Luckily, many PC applications on both the Macintosh and Unix networks already had a client/server orientation. For example, Macintosh users had QuickMail from CE Software, Inc. in W. Des Moines, Iowa, to send and receive E-mail to a desktop mail server. About that time, the university standardized on Oracle Corp. databases, which were also client/server-based.

Gate swings both ways

Victoria Anderson, a systems analyst at Georgia Tech's Office of Information Technology User Services, and Parker began testing Macintosh-to-Unix gateways. The goal was to connect to Ethernet through LocalTalk cabling.

The university evaluated FastPath (a Shiva Corp. product), Ethergate (from Shiva) and GatorBox (from Cayman Systems, Inc. in Cambridge, Mass.). Upon evaluation, GatorBox was judged to be the only product to provide the desired reliability and flexibility.

“GatorBox acts as a gateway between the [Macintosh and Unix] machines,” Parker explains. Entities on the Ethernet can access Apple LaserWriters and other services, while Macintoshes can communicate with Unix systems running TCP/IP.

Gateways were installed at 11 selected networking sites, which soon grew to to 30.

About that time, the state of Georgia's Board of Regents standardized on GatorBox, making it easier for Georgia Tech to follow suit, according to Vicki Risk, a user advocate at Cayman Systems.

Hardware and software for each GatorBox cost Georgia Tech about $2,600, Parker says.

Since the integration, the network has expanded. It now includes Silicon Graphics, Inc. workstations; Sun SPARCstations and SPARCservers; and a cluster of DEC DECstation 5000 Model 100s, DEC VAX 9000s and DECstations running Ultrix and Next, Inc. computers.

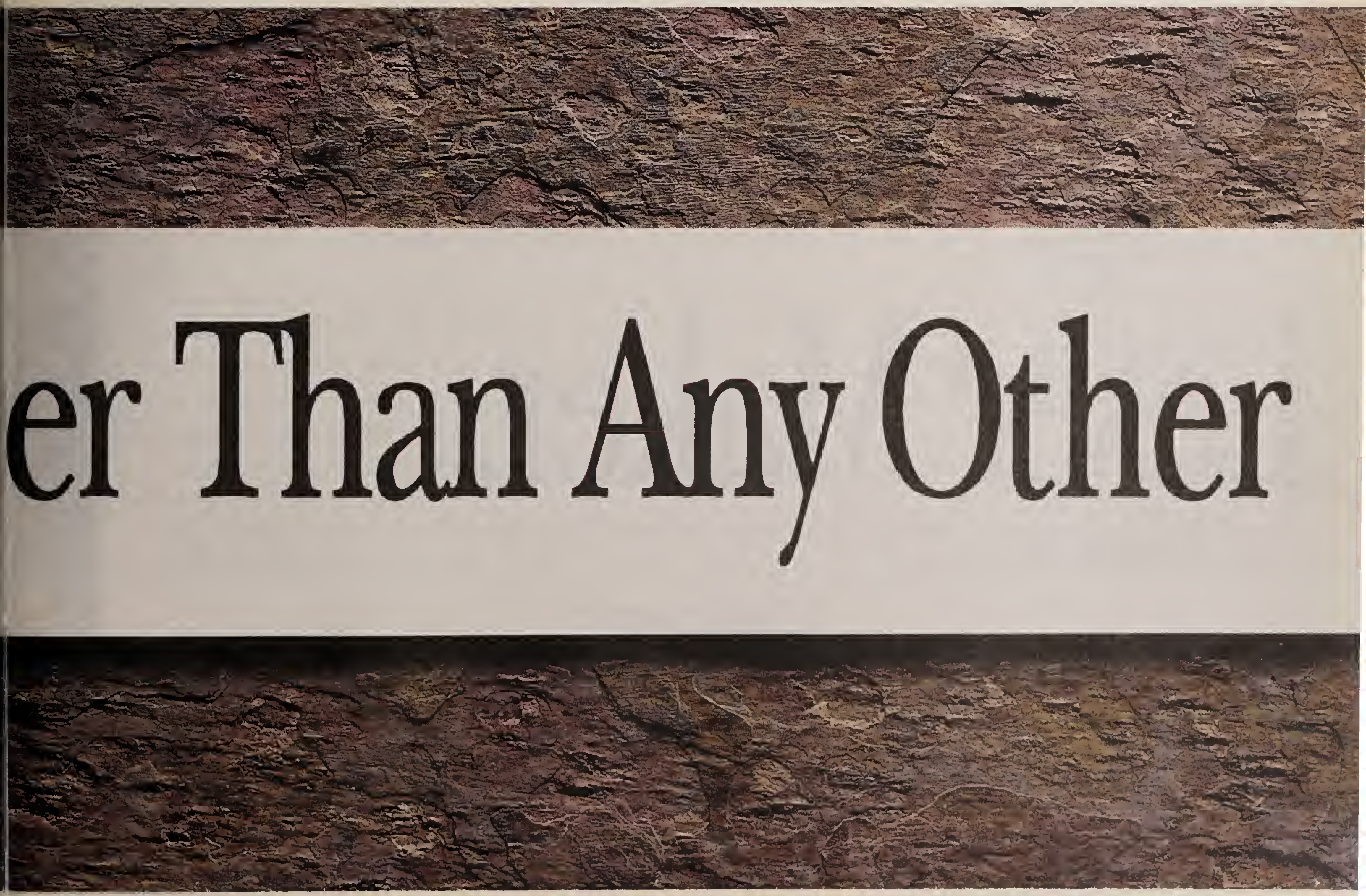
“We've selected TCP/IP as the protocol of choice, but users will be able to use the software and interfaces they're familiar with to get the most out of network services,” Parker says.

While the Macintosh-Unix link is considered successful, an optional feature that gives Macintoshes network access to Unix-based Network File System (NFS) file servers has proved less popular, Parker says. “Most Mac users don't use NFS files for file sharing,” he says. “They use AppleShare.” •

Rob Nelson

Georgia Tech's Parker: *“How do I get into Unix? The answer was ‘get yourself connected to Ethernet.’ ”*

Emmett is a free-lance writer based in Hewitt, N.J.



Putting Apples on the vine

Dana-Farber adds 300 Macintoshes to network at cost of $500,000

INTEGRATING MACINTOSHES

Dana-Farber Cancer Institute

BY PAULA JACOBS
SPECIAL TO CW

The Dana-Farber Cancer Institute learned a lesson that many organizations are certain to discover in the near future: Don't leave out the Macintosh.

Four years ago, administrators at the world-reknowned cancer research and treatment center in Boston embarked on a $4 million enterprisewide networking plan aimed at linking 1,400 computing nodes.

A major goal was to improve information access and sharing. Researchers and other users needed access to the latest literature and statistics on such areas as acquired immune deficiency syndrome and cancer.

Another goal was to provide in-house electronic-mail communications, as well as communications to other hospitals, medical centers and research centers.

So the institute called in Trellis Group, Inc., a Dallas-based systems integrator, to construct a campuswide network spanning seven Boston-area locales.

Universal connectivity allowed doctors, researchers and administrators to access research databases from a variety of platforms, says Bill Harrison, director of networking and systems at Dana-Farber.

Then the Apple Computer, Inc. Macintosh users wanted in.

Enter Macintosh

So in early 1991, the three-member information systems networking group called Trellis back in and began looking for ways to link approximately 300 Macintosh SE and IIfx users to the Ethernet backbone.

The original network consisted of an Ethernet backbone with multiple independent AppleTalk networks and a Digital Equipment Corp. DECnet network. Member systems included 250 IBM and compatible personal computers; 50 Unix-based workstations; and DEC VAX 6000 and IBM Application System/400 minicomputers running VMS and OS/400.

The first step was to provide printer sharing and document exchange between the Macintoshes via an AppleTalk network, Harrison says. A bigger challenge proved to be maintaining data integrity with different file structures.

Harrison estimates that the Macintosh portion of the integration cost about $500,000, or about 12% of the overall enterprisewide networking cost.

Millicent Harvey

Dana-Farber's Harrison *says one drawback of the net is that its AppleTalk bandwidth does not support file sharing, imaging*

Dana-Farber now has a 1,300-node, enterprisewide campus network with full Macintosh connectivity. The Ethernet 10M-bit backbone supports multiple protocols, including Transmission Control Protocol/Internet Protocol and DECnet.

Harrison says one drawback is that the 250K bit/sec. bandwidth of AppleTalk cannot support file sharing, imaging and database structures.

Dana-Farber is evaluating a plan to upgrade AppleTalk over a 10Base-T or alternative high-speed network. The aim is to gain transparent file sharing and provide for a central database architecture. Possible options include hybrid network systems or alternative network operating systems.

To speed the process, Dana-Farber's networking staff and Trellis have set up an on-site laboratory to do hands-on evaluation of different application packages, document converters and mail gateways. ●

Jacobs is a Framingham, Mass.-based technical writer.

Laser Maker.

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Dana-Farber's net specs

An AppleTalk network runs over Farallon Computing, Inc.'s PhoneNet using a central wire center, bridges and Ethernet gateways. The network also supports DEC's Total Operating System, which provides Macintosh network file sharing capability over networked AppleTalk.

Linked to this are multiple subnetworks that use a combination of two Sun Microsystems, Inc. networks and 12 AppleTalk networks running over Shiva Corp.'s FastPath gateway.

The Ethernet subnetwork gateways give Macintosh users access over three T1 leased lines and a fiber line to the rest of Dana-Farber's 20 subnetworks, including four satellite research offices.

All Dana-Farber local-area networks are internetworked into the main Ethernet backbone.

For E-mail transfer between the Macintosh and PC systems, the institute chose Cayman Systems, Inc.'s GatorMail gateway package.

The backbone system is routed, using four Cisco Systems, Inc. routers, into a variety of star technology hubs and wire centers on the Ethernet side.

The Banyan Systems, Inc. Vines network connects the Macintosh computers with about 500 PCs in a Token Ring configuration. The Macintosh computers can share files easily, with fairly transparent file conversion.

PAULA JACOBS

CLOSE-UP

- **Organization:** Dana-Farber Cancer Institute.
- **Goal:** Integrate 300 Macintoshes used by researchers into 1,300-node campus network.
- **Strategy:** Link Appletalk to institute's network and 20 subnetworks.
- **Payoff:** Improved access to various on-site and remote databases, information services.

Macintosh a baby elephant in FDDI corporate jungle

BY JOANIE M. WEXLER
CW STAFF

While Apple Computer, Inc. has big enterprisewide plans, the Macintosh is currently a stranger to 100M bit/sec. Fiber Distributed Data Interface (FDDI) corporate backbones.

Until FDDI adapter cards become available — still about six months away — Macintosh servers can't be linked to the high-speed network.

Apple says no vendors have yet shipped Macintosh FDDI network adapter cards, though several are now developing products. Cabletron Systems, Inc. in Rochester, N.H., for one, says it plans to roll out FDDI cards for the Macintosh this summer that will cost between $1,200 and $1,500.

When Macintosh FDDI cards do arrive, many users will be waiting eagerly.

"I'd buy them today," says Edwin Riddle, head of NASA-Langley Research Center's communications and network systems branch in Hampton, Va.

Riddle says he wonders, however, if the AppleTalk protocol could yet fully use FDDI's bandwidth because some communications protocols have inherent limitations in how fast they can be placed onto a network.

Neville Pereira, a supervisor at Ontario Hydro Research Division's integrated computing environment in Toronto, says he would also buy Macintosh FDDI cards. "Where there is a [high-end Macintosh server] connecting a large community of Macs, we would like to connect that server to FDDI," he says.

But Pereira also notes that most Macintosh applications do not require the high throughput of FDDI. The exception, he says, might be "if you are using a Mac as a front end, say for the X Window System." The graphics-oriented networking protocol lets users call programs and data from multiple networked hosts using several windows on one screen.

The need for Macintosh-FDDI connectivity will be fueled by the emergence of multimedia applications, predicts Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. Apple is considered to be at the forefront of multimedia technology.

Howard says he has viewed videoconference-based multimedia demos at Apple headquarters, and "when running across [10M bit/sec. Ethernets], the application is visibly slowed."

He explains that because of the limited bandwidth of Ethernet, real-time sessions are not possible. However, he adds, store-and-forward technology has problems "because video and voice take up a horrendous amount of storage."

Wexler is a *Computerworld* senior editor, networking.

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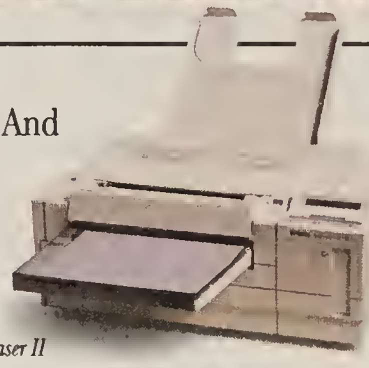
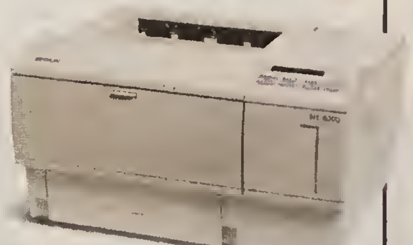

The ActionLaser II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Video/(GrayScales)	VGA/(16)	VGA/(32)	VGA/(32)
Ports	Serial, Parallel, External VGA Monitor, Modem	Serial, Parallel, External VGA Monitor, Modem, External FDD, External PS/2	Serial, Enhanced Parallel, External VGA Monitor, Modem, External FDD, External PS/2
Software	MS-DOS® 5.0 included	MS-DOS 5.0 Pre-Installed; Microsoft® *Windows* v. 3.0 included	MS-DOS 5.0 Pre-Installed; Microsoft *Windows* v. 3.0 included
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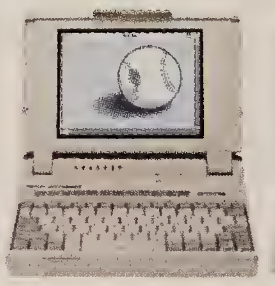

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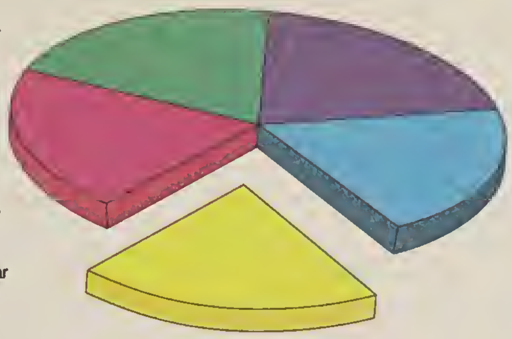

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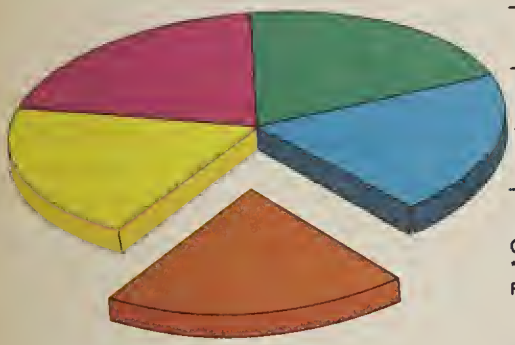

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Future considerations

In as few as 10 years and into the 21st century, we'll see technology come of age that will change our work and transform our lives

BY CHARLES P. LECHT

It is 1992, and I am living in Tokyo, or should I say dying? I have a disease from which I am told there is no escape.

I feel like Evans in Arthur C. Clarke's Transit of Earth. *Evans is on Mars, and the rocket ship sent to save him has missed its mark. Analogously, the diagnosis of my cancer through the usage of a computer-assisted tomography scan may have been performed too late to save me.*

"In 24 hours," Evans says, "all the oxygen will be gone." He prepares his last words on a tape recorder so future generations might know of him and what he has done. In my case, only God knows how many days remain before my oxygen is gone, too. Like Evans, I am putting my words down so that at least my family and friends may remember me after I am gone.

This is likely my last forecast for the computer industry. Maybe it's a kind of ironic good fortune that I may not be around to suffer the fate of seeing whether these predictions come true.

I will start with the big picture — today's emerging global networks of computers — and end with the solitary device we call the computer. I'll then offer my humble opinion about why technology is so important to our survival.

Without further ado, here is my picture of what the near and long-term future holds for the computer industry:

Today's versatility in computer and communications technologies is marvelous. Upon completion of this essay, my discrete computer will be connected via Japan's Venus-P network to an AT&T network so I can ship these words to my publisher's discrete computer to be processed into the first chapter of a book. Thus, my computer is at once a discrete desktop machine and also a terminal to a larger system whenever I want it to be. It automatically shares local and international facilities with a keystroke.

Fred Ingram

I see little essential difference between a computer spread by networking technology over a continent and the microchip that resides on a sliver of silicon. Look at the concept this way: If you were a microbe suspended above a silicon chip and looking down on it, you would see essentially the same scene as an astronaut might, suspended above the landscape of a national communications network.

If you accept the idea that a computer on chip and one that girdles the globe are virtually the same, the picture of technology in the 21st century will be clear. It is a picture of sharing massive computer systems power invested in our public and private communications utilities; it is one of ad hoc connection of otherwise discrete and disconnected computing devices; and it is one of embedded computer systems.

Technology in the 21st century will enable us to share the three most fundamental principles upon which all computing is based: the gathering of inputs, the use of processing facilities and the creation of outputs.

Disparate groups of people will prepare data for the same applications, massive systems will process it in an ever-changing kaleidoscope of network syntheses, and the results will be retrieved by authorized people, wherever they may be.

Inevitable progress

Of course, communications will have to improve in order to create the optimum environment for this sharing. High-speed broadband wire, cable, fiber-optic and broadcast facilities will have to become commonplace. We need not wonder whether this will happen; the only question is when.

Rewiring in-place networks will take decades — longer than creating new networks piggybacked on old facilities such as telephone poles and railroad sidings as well as television and microwave towers. In-place facilities will continue to be used, but only when economic considerations prevent their replacement.

And there are other considerations impeding the kind of ad hoc syntheses I envision. The current national networks are too expensive to make their utility common for users. Crossing national boundaries that are tariffed locally ensures that users essentially

Continued on page 80

Lecht is an IDG News Service correspondent working in Tokyo. This article is based on his book *The Information Tsunami,* which is to be published in April by IDG Books.

……

- **The advent of special-purpose machines**
- **Got 400 million text pages? You can store 'em**
- **Putting past predictions to the test**

IN A CATEGORY OBSE
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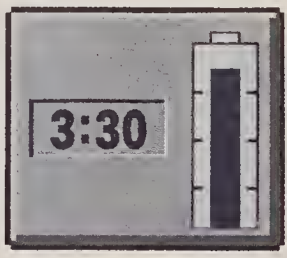
Make it smaller. Make it lighter. Make it lighter. Make it smaller.

These must be the mandates of every R&D document handed to the engineers of today's crop of notebook computers.

Admirable goals to be sure. Goals that the engineers at Compaq, however, believe fall short of making the most of portable computing.



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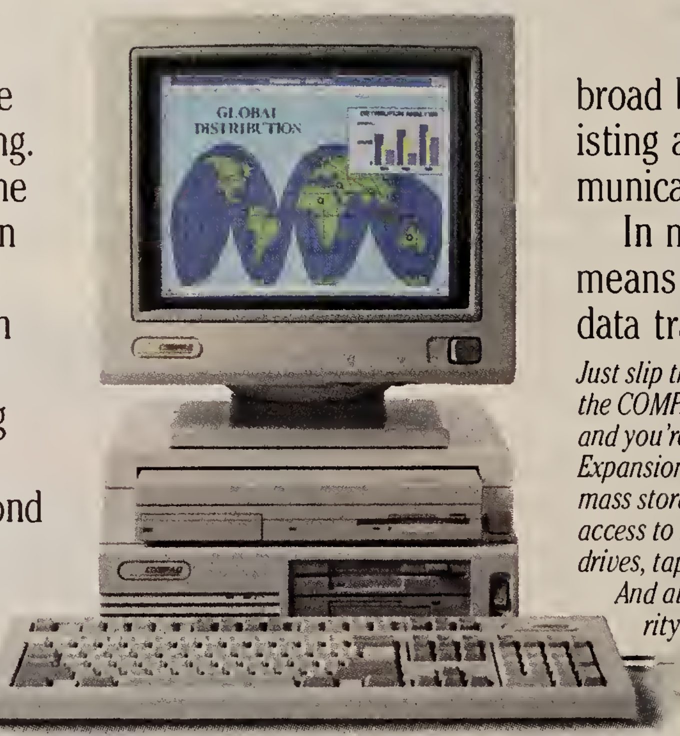

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Actual weight: 6 lbs. Actual dimensions: 8.5"x11"x1.75". Actually, this is the best notebook we've ever built.

Continued from page 77

pay a duty, much as they do on material goods, on imported or exported information.

In addition, the need to negotiate separate service arrangements with each national service provider is a barrier to developing truly global, multinational networks.

Network cooperatives

But the situation will change with the establishment of cooperatives that cross state and national boundaries. Examples of such cooperatives in their embryonic forms exist today. For example, Electronic Data Systems Corp. operates an extensive data network for itself and for General Motors Corp.'s domestic and international operations. Cable and Wireless PLC, a British firm, has begun the construction of what it describes as "the global information highway" linking all continents with optical fibers. And Syncordia, a joint venture of British Telecom PLC, France Telecom, Deutsche Bundespost and Nippon Telegraph and Telephone Corp., has announced its intention to assemble a global, broadband multilateral communications utility.

To work in parallel with communications carried by wire, wireless communications — including satellites — will also have to be upgraded. Vast improvement is needed in this area; today's wire-connected systems are burdensome on offices and expensive to maintain, and they impede technological advancement.

Before the end of this decade, wired local-area network facilities may well be augmented by the wireless broadcast of data between various computer systems and devices and may be replaced by wireless technology in the first decade of the 21st century.

This occurrence should clean up the wired mess that characterizes many of today's office communications, as well as reduce maintenance costs and prepare the way for a nonmaterial upgrading of LAN facilities as new innovations appear.

This phenomenon will begin first in a single office, then between offices. In the distant future, such wireless communications will exist between buildings and compound communities and even between cities and continents.

Of course, wireless satellite and microwave communications already exist, but these are unavailable for use in certain situations — between a printer and a personal computer in an office, for instance. Even if these technologies were available, they are so mired in a web of national and international bickering and so expensive that no one would use them.

However, these problems will be overcome. While it will take 25 years, we can expect broadcast connections to become part of everyday use. With communications barriers eliminated, we will once again focus our efforts on improving our local processing facility — namely, the device we all call a computer.

You've come a long way

We'd be hard-pressed not to notice that there have been vast improvements in computer technology in the past 35 years. I encountered my first stored-program digital computer (an IBM 604) when I took a job at IBM in 1955. When I compare that system with what I am using today, I am flabbergasted.

Auxiliary memory has increased to more than 32,000 times that available on the 604, and it is housed in a unit more than 1,000 times smaller. Available random-access memory or RAM-like memory has increased 2 million times. Processor speed has increased several thousand times. In absolute dollars, my PC costs about a third of the cost of the 604; taking inflation into consideration, its cost is minuscule by comparison.

When you consider relative facility sizes, electrical costs and maintenance of the two systems, cost of operation has decreased to a point at which there can be no comparison. This is all the more startling when you consider that I am comparing one of the largest commercially available computers in 1955 with one of the smallest available today.

Unlimited speed

But the future is even brighter. Current reduced instruction set computing systems offer up to 50 million instructions per second (MIPS) at a workstation. By using CPUs in parallel, we will be able, by the end of this decade, to acquire small systems technologies featuring CPU clusters, each producing 200 MIPS or more.

These MIPS will be packaged on a board or in a housing that today holds only one CPU.

Such a setup will break the processor speed barrier and make possible those applications we've only dreamed about, such as articulate language translation, perfected database engines that feature instantaneous data storage/retrieval, the mathematical modeling of a corporation's economy and easy-to-use multimedia.

We will also perfect voice inputs so that users needn't remain slaves to the keyboard, although they will never be entirely free of it because of the need for private password recognition, the boredom of speaking a long list of numbers to a computer and workplace noise. (Who wants a hundred people in an office shouting "Copy" to their computers or a hundred computers shouting for more data?)

In the future, there will be a place for both input modes. Which a user chooses will depend on his data creation/entry/receiving requirements.

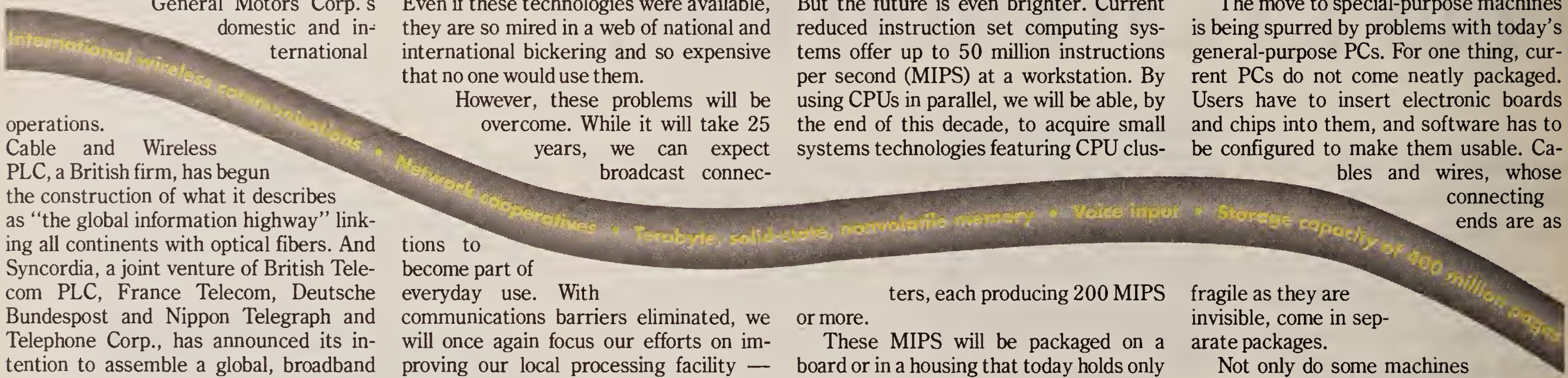
With sound, we will have at our disposal all the human faculties to help us communicate with computers as naturally as possible. Special-purpose PCs (including those with expert system capabilities) will appear everywhere. These are systems dedicated to performing only one task, such as word processing, communications, graphics creation, desktop publishing, financial reporting and so on.

The move to special-purpose machines is being spurred by problems with today's general-purpose PCs. For one thing, current PCs do not come neatly packaged. Users have to insert electronic boards and chips into them, and software has to be configured to make them usable. Cables and wires, whose connecting ends are as fragile as they are invisible, come in separate packages.

Not only do some machines have unreadable instructions, but putting them together can also frustrate the patience of otherwise intelligent people.

This problem can only be overcome by the development of intelligent computing devices that require no preparation except opening the package and clearing space on a desk for their use.

Some special-purpose computers — word processors; word translation, calendar, telephone and memo devices; alarm systems; cash dispensing/register machines; and fuzzy-logic home appliances — are available today, but these are just


International wireless communications • Network cooperatives • Terabyte, solid-state, nonvolatile memory • Voice input • Storage capacity of 400 million pages

Were my predictions on the mark?

More than a decade ago, I made scores of predictions in my book *The Waves of Change* (McGraw-Hill, Inc., 1980), a technoeconomic analysis of the computer industry. How did I fare? Judge for yourself by looking at some of those forecasts:

▶The computer industry would evolve along the lines of the electrical power industry. I envisioned that in 50 years, huge computer time-sharing utilities would be formed to supply computer systems power like electricity. However, unlike the power industry, which today places minuscule packets of electrical power in the hands of, say, power tool users and massive power in the hands of utilities, I didn't see the technology topography becoming bipolarized.

Until computer power utilities emerged, however, there would exist a wide and ever-increasing sea of handheld, laptop, desktop, workstation, mainframe and even supercomputer facilities. These would be linked for ad hoc use through LANs, value-added networks, public and private data networks, wide-area networks and public switched telecommunications networks, including Integrated Services Digital Network (ISDN), to form temporary, discrete and connected lattices of devices.

▶Starting in 1980, there would be a move to distribute "a computer for every user."

▶The success of a corporate information systems organization would be measured in terms of its accomplishment in proliferating its capabilities throughout the corporation and in losing its own identity.

▶AT&T would enter the computer systems marketplace. *While I was correct in this forecast, I thought it would happen sooner and that it would be more successful. However, I think the jury is still out on AT&T's success in purveying computer systems. When that jury returns, its verdict will be on AT&T's side. Watch the company as the ISDN era unfolds.*

▶IBM and AT&T would go to war. *This prediction was off because the companies basically carved up the computer and communications business turf neatly and made love, not war. IBM got out of the communications business by divesting itself of Satellite Business Systems. AT&T divested itself of its operating companies and became primarily a long-line communications company with only an ancillary interest in entering the computer hardware field.*

A merger of the two could produce a company that would rule the computer/communications industry for the next century.

▶The minicomputer manufacturers, so successful in the 1970s, would either fail or have to change their business radically in the 1980s. I saw this happening because the products they were selling would be squeezed from the top with ever-cheaper versions of mainframe systems and from the bottom with ever-more powerful desktop/workstation systems.

▶Japan would emerge as a world-class power in manufacturing computer and communications systems.

▶Software would be unbundled once and for all. Concomitant with this would be the emergence of the software publishing industry.

▶IS hardware and software budgets would invert. Software development/procurement costs would become more than four times those of hardware.

▶Computer hardware technology would become "fluidware," flowing into corporations very quickly.

▶Cobol and Fortran would die out. *On this, I was wrong, but how was I to know that "Cobolcoholism" and Fortran addiction were incurable? While I was right in saying that a new world of business applications generators would emerge to eliminate the need for Cobol, this is happening much more slowly than I anticipated. But the Fortran addiction in supercomputer facilities will doubtless outlast us all.*

CHARLES P. LECHT

the beginning. I see an endless marketplace for embedded, computer-driven devices that touch all that we do intelligently as well as physically.

It may be the most fertile marketplace for computer manufacturers for the remaining part of this and into the first half of the next century.

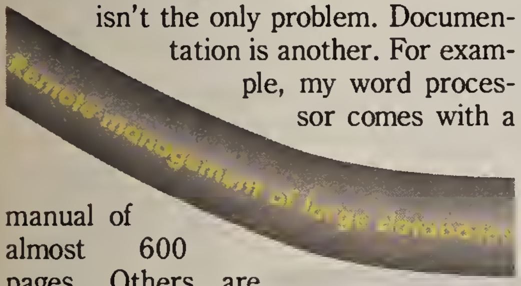
More user-friendly software

Then there is the software issue in the general PC area. While new operating system software — such as Microsoft Corp.'s Windows, OS/2, Unix and Windows New Technology, among others — offers users greater and greater capabilities, it has also become commensurately harder to use.

Even installing it can require help from the kid next door, who is taking a computer course. Wouldn't it make things easier to preinstall operating system software in computers and make its use self-prompting, if not transparent, to users?

I forecast that preinstallation will occur within the next year or two. IBM will preinstall OS/2 in that time frame, with other manufacturers following its lead. The self-prompting feature will take another 10 years and transparency another 25.

But the operating system software isn't the only problem. Documentation is another. For example, my word processor comes with a manual of almost 600 pages. Others are even longer. You have to take the equivalent of a university course to be able to understand a software manual. How can software creators reasonably expect anyone to simply load and operate their products in such a case?


Remote management of large databases

The first company that comes out with any reasonable desktop publishing/word processing software that brings a user up to par quickly, without his reading a boring voluminous treatise, and that anticipates his skill (or lack thereof) is in for big bucks, in my view. A word processor/desktop computer with enough MIPS could conceivably do this, and it's my bet that such a machine will arrive by the end of this decade.

That computers continue to arrive with ever-increasing amounts of RAM and disk memory is a boon to users weary of managing flocks of floppies.

However, of far greater consequence is the emerging capability to manage very large databases (including backing them up) in a highly unified environment and to access these in ever-shorter time frames from just about any location.

Insatiable memory

But the future holds much more. How would you like to have a memory so large that it could never be filled up in a lifetime, memory accessed so fast that data location could be freed from the tyrant of hardware geography? A terabyte (trillion bytes) of solid-state, nonvolatile memory could do this once and for all. Plug-in memory modules containing high-density chips whose circuits are etched in the Fermi world (trillionths of a meter) are required.

Such capacity would enable a user to hold more information than he is ever likely to produce — more than 400 million pages at 300 words per page. Users would never again have to face the issue of where to store data to free the computer for more.

I foresee such memories available by the turn of the century or shortly thereafter. Think about it: Valuable data, impossible to keep in the past simply because of lack of available storage space, could be retained. Think of the impact this could have on our lives, particularly in the fields of science and philosophy.

Had such memories been available from time immemorial, we would have learned long ago to model the phylogenetic process to study how life evolved and maybe even how it originated. We would have learned to reproduce the programs running in cells and to create cells synthetically so that we could replace defective ones. Diseases would have been eradicated.

Massive memories could provide us with the means to create holographic replicas of things past and things to come and to experience these without suffering their effects. Our intelligence, artificial and real, could be augmented with artificial experience to enrich and refresh our memories.

It is difficult not to notice that we need to augment our natural senses artificially so that we can process and communicate life's messages and data in ever-more effective ways. Computer technology may offer the only means to do this. That's not to say that augmentation is impossible to achieve naturally; however, there may not be time enough for this to occur.

Even though people are becoming smarter and living longer as time passes, we cannot help but notice that we still haven't figured out how to live in peace or how to forecast and become free of natural disasters.

Just as the lever is an amplifier of physical strength, the computer is an amplifier of intellectual power. We improve computer technology in a quest to improve our lives, where we are going and what we'll find when we get there.

Surely, if the past 35 years of computer technology development offer any indication of what's possible in the next 35 years, we may look forward to the discovery of at least some of the solutions to our earthbound problems and a much brighter future for the generations to come. •

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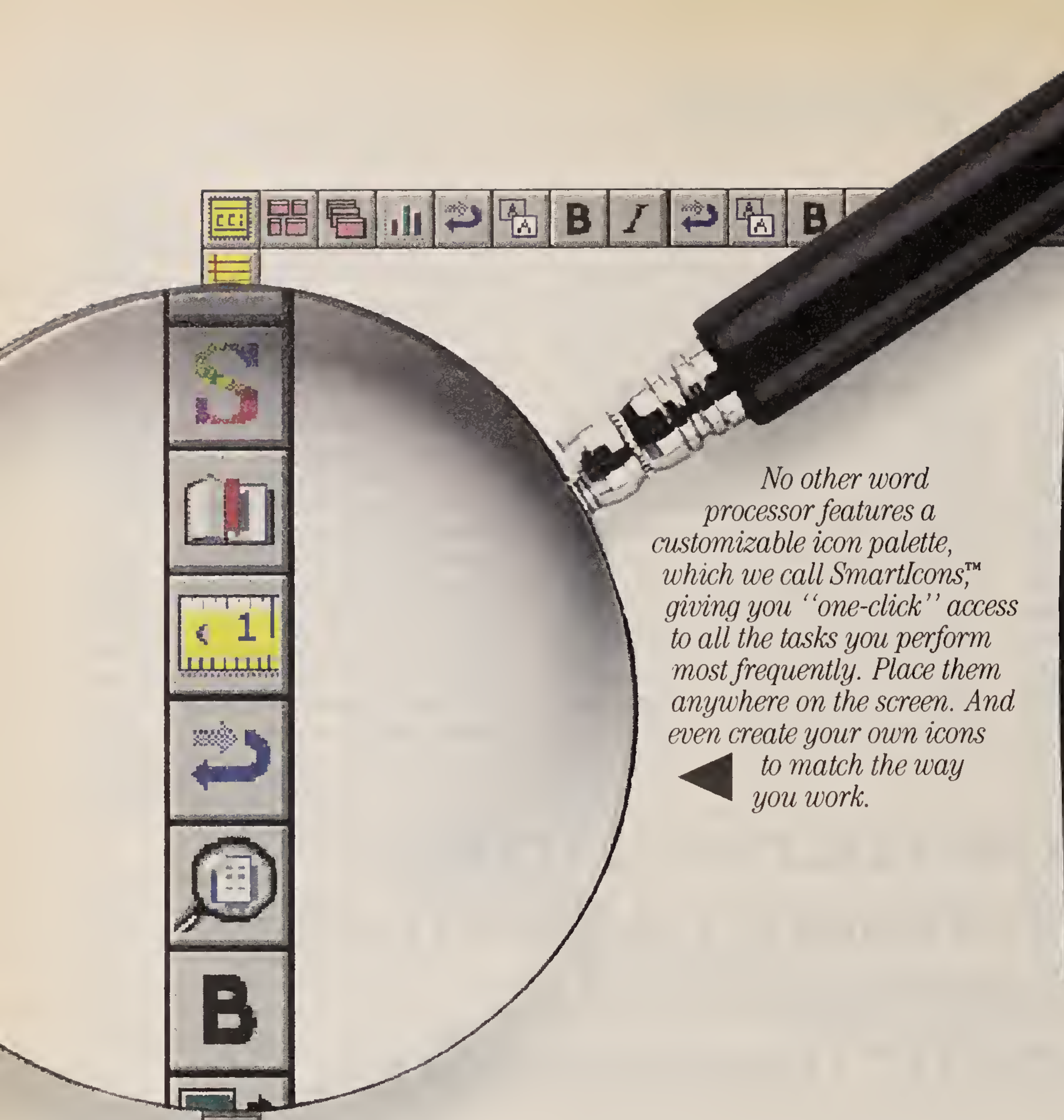
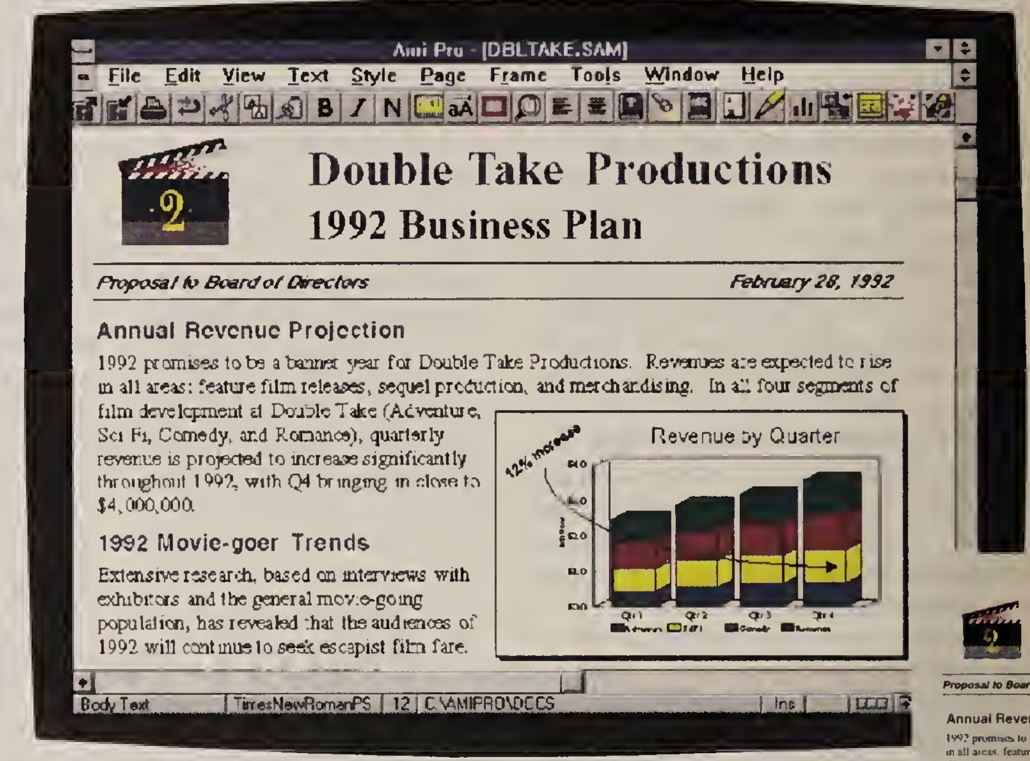


No other word processor features a customizable icon palette, which we call SmartIcons,™ giving you "one-click" access to all the tasks you perform most frequently. Place them anywhere on the screen. And even create your own icons to match the way you work. ◀



Double Take Productions
1992 Business Plan

Proposal to Board of Directors *February 28, 1992*

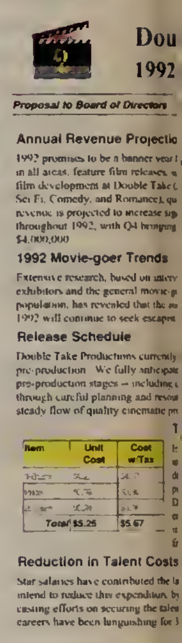
Annual Revenue Projection

1992 promises to be a banner year for Double Take Productions. Revenues are expected to rise in all areas: feature film releases, sequel production, and merchandising. In all four segments of film development at Double Take (Adventure, Sci Fi, Comedy, and Romance), quarterly revenue is projected to increase significantly throughout 1992, with Q4 bringing in close to $4,000,000.

1992 Movie-goer Trends

Extensive research, based on interviews with exhibitors and the general movie-going population, has revealed that the audiences of 1992 will continue to seek escapist film fare.

Only Ami Pro 2.0 is truly WYSIWYG. So your output will be precisely what appears on screen. No matter what printer you have. Plus, only Ami Pro 2.0 has its charting and drawing capabilities built right in so you never have to launch another program. Which means you can easily add graphs, tables and freehand drawings to your document. ▶



With its unique pop-up Status Bar, Ami Pro 2.0 lets you quickly access or change type styles, fonts and sizes. Which means you'll save even more time. ▼

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We call it Visual Word Processing because it lets you work the way you think. So you can turn out letter perfect, picture perfect documents with half the effort in half the time. And since it's fully integrated with all our Windows products, you can quickly move information

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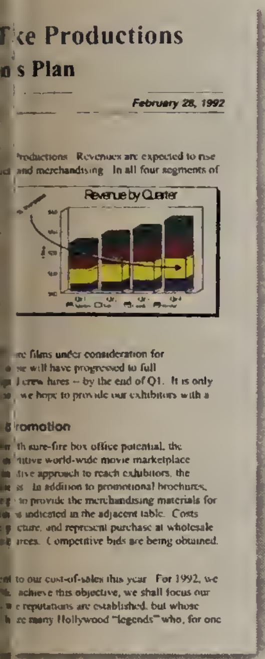
Ami Pro 2.0 is the only word processor that gives you built-in single-click access to cc:Mail™ electronic mail. So you can quickly send "live" Ami Pro documents to anyone you work with. Without leaving the application.

CC: MAIL
PRIORITY
CC: MAIL

We've even included Adobe Type Manager® which comes with 13 scalable fonts to make your type look as good on screen as it does on paper.

Since all our Windows products are fully integrated, you can—by simply clicking an icon—launch into any one of the applications directly. So you can move and share data between them with incredible ease.


ke Productions
s Plan
February 28, 1992
Revenue by Quarter

challenged as the most Windows word processor."

—*PC Magazine* 11/12/91

between them with no hassles at all.

Maybe that's why Ami Pro 2.0 is not only making word processing easy. It's making headlines too. To upgrade to Ami Pro 2.0 from another word processor for only $129,* or for a free working model, **call 1-800-545-6116, ext. 6512.**

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IN BRIEF

Study: IS budgets will grow in '92

A recent information systems budget study by **Business Research Group** in Newton, Mass., found that 1992 IS budgets will increase by an average of 4% from the previous year.

The survey revealed that 43% of IS departments planned to increase spending this year, 23% planned to cut their budgets, and 34% stayed level with 1991 spending. Respondents from the health care industry revealed the greatest average budget increase, 8%. Finance and discrete manufacturing industries lagged behind with expected increases of 2.5% each.

Respondents said networking products will see the greatest spending increase, 5%.

■ Former Federal Reserve Board Chairman **Paul Volcker** was one of two winners of the **1992 Payment Systems Excellence Award** from the National Automated Clearing House Association (NACHA).

Volcker was honored along with **Mary Lou Koch**, a Ross Laboratories, Inc. executive who chairs the American Payroll Association's Automated Clearing House Committee.

As Fed chairman, Volcker pushed to expand the development of electronic payment networks and establish a risk management program for payment systems. Koch implemented a direct deposit program at Ross Labs and has encouraged other firms to cut costs with similar programs.

■ **Baxter International, Inc.** recently signed a one-year contract to participate in the **Data Processing Management Association**'s professional development program.

Ten IS employees at Baxter's North Cove plant in Marion, N.C., will participate in the pilot program. "This will help Baxter retain its best employees," said Richard Parrow, IS manager at the plant.

Aerospace plans for turbulent times

IS counters budget cuts by downsizing, rethinking purpose

INDUSTRY CLOSE-UP

IS in the Aerospace Industry

BY JILL VITIELLO
SPECIAL TO CW

The same companies that made products that helped win the Persian Gulf war are now battling to save themselves from the effects of peacetime.

With President Bush and Congress calling for cuts in the defense budget ranging from $50 billion to $75 billion during the next five years, the aerospace industry is grappling with lower demand from the federal government. To make matters worse, commercial demand is down as well, with airliners going bankrupt or out of business. General aviation billings fell 10% to $1.8 billion in 1991, according to the Aerospace Industries Association.

Information systems departments, whose own budgets have been slashed (see story page 86), are under tremendous pressure to streamline their organizations, seek diverse markets and find new ways of doing business. To meet these goals, they are overseeing the move to smaller and cheaper platforms, rethinking their missions and helping their companies move into new business areas.

"The innovative use of IS resources is enabling aerospace companies to change their business mix," says Gerald H. Sandler, president of Grumman Data Systems and Services Group.

While outsourcing is still in vogue for cutting costs — 64% of aerospace companies responding to a survey by CSC Index, Inc. said they will farm out some portion of their operations — IS is looking for new ways of dealing with the crunch. For example, some IS departments are spearheading the migration to networked personal computers.

John Pirman

For GE Co.'s Aerospace Division, the move to a networked, client/server environment was the result of an overhaul of the company's existing engineering and manufacturing practices.

"We've completely revolutionized our corporate structure, our management strategies and the way we use technology," says Phil Magrogan, a systems architect at GE in Syracuse, N.Y. That revolution has saved the company $12 million, he said.

Setting standards

Last year, Magrogan led a team that worked with engineers who design sonar and radar systems using imaging software. Employing a technique the company calls engineering process improvement, the team interviewed the engineers to find patterns in their design practices, researched design methods and created "best practice" standards for the engineers.

To support those standards, the company purchased Sun Microsystems, Inc. SPARCstations and computer-aided design and manufacturing (CAD/CAM) software for 1,000 engineers at a 60% volume-deal discount.

Continued on page 86

Taming the 'difficult' executive

BY JAMES DALY
CW STAFF

We've all known the type. Brilliant but brash. A manager with the cerebral skill of Albert Einstein and the social grace of Attila the Hun.

If grating interpersonal skills are staining the reputation of an otherwise wonderful employee, a little smoothing of the rough edges may be in order. One bad apple may, in fact, spoil the whole bunch. According to Beampines, Inc., an executive counseling firm in New York, managers who are intimidating, indecisive or deaf to any agenda but their own quickly foster an atmosphere of waning employee morale and may even hobble productivity.

As a result, Beampines has organized Executive Development Counseling (EDC), an extended program to improve the interpersonal effectiveness of executives who possess upward potential or valuable technical expertise.

"Having an MBA doesn't guarantee that someone is going to make a good executive," said Lou Levetown, who has used EDC as vice president of human resources at New York-based Health Management Systems, Inc. and, in an earlier post, at Automatic Data Processing, Inc. "Interacting well with those above or below you is key, and that's just not covered in the classroom."

The EDC service is not cheap — it can run upward of $8,000 — but managers find it is often far cheaper to fix a squeaky wheel than replace it. The associative costs of compensating a fired executive along with the fees inherent in finding a replacement can be several times the EDC fee, Levetown said.

Workers are enrolled in EDC after having typically fostered rocky relationships with co-workers. Reasons vary widely. The employees may possess disruptive personal ticks or may be adjusting to a new management culture or moving to a new area.

Beampines executives cited the case of one information systems director whose company had been the recent target of a takeover. The mood in the department was edgy, and the executive became overcontrolling and defensive; subordinates quickly became whipping boys for internal duress.

The first step on the road to resolving such a situation is getting the manager in question and his superiors to recognize the problem. This can be tricky. While superiors may view one person as knowledgeable and in control, subordinates may see him as niggling, overbearing and accustomed to treating them with little respect.

A frequent suggestion is to focus a troubled manager's attention on leading a group rather than on managing each of his subordinates' jobs. These principles are driven home through individual coaching and training sessions that take place over four weeks.

"It's structured so the person doesn't look like an idiot or feel that the only way they are going to improve is through expensive counseling," Levetown said.

Aerospace plans for turbulent times

CONTINUED FROM PAGE 85

The engineers, who used to work off of an IBM mainframe, now exchange and share data, view images simultaneously and track projects more efficiently on their networked computer.

GE's re-engineering and its migration to a client/server platform enabled it to cut its engineering staff by 50%.

"The company changed its cash flow," Magrogan says. "It took money previously allocated to salaries and put it into computers that make the remaining engineers twice as productive."

The $3 million tab for the technology was offset by a $12 million savings made by cutting staff.

For Pratt & Whitney's IS department, a downsized, client/server environment is not only cheaper, but it supplies the company with excess computing capacity. IS taps into the systems in the evening when primary users are gone and processes complex, scientific jobs.

"The client/server environment allows us to keep up with technology and hold down computing costs," says Dominick Lombari, manager of CAD/CAM systems development at the East Hartford, Conn.-based company, a division of United Technologies Corp.

"Without that power, we could not compete in the industry," Lombari added.

Time for change

Aerospace companies' IS divisions are also using the current economic climate to rethink their organizations and business missions.

Some have reconfigured entirely, turning former, cost centers into profit centers.

Ouch!

According to a recent survey of aerospace companies conducted by Cambridge Mass.-based CSC Index, these firms expect to cut their IS budgets by an average of 7.1% this year. That figure is more than double the reduction expected by IS managers only one year ago.

For some firms, the numbers are even worse; IS budgets at both Rockwell International Corp. and Grumman Data Systems and Services are down 10%.

For example, last year Grumman Corp., based in Bethpage, N.Y., formed Grumman Data Systems and Services Group, which serves both internal and external customers.

The group provides systems development and operations for Grumman business units; however, 65% of its IS business is in selling systems integration and maintenance services to federal and commercial customers.

Another aerospace company that positioned its IS area to make a direct impact on the bottom line is Hughes Aircraft Co., owned by General Motors Corp. In 1990, Hughes Information Technology Co. was formed in Washington, D.C., and staffed by about two dozen IS professionals. Their principal role is to uncover opportunities for Hughes to enter new technology markets.

Critical moves

Both Grumman's and Hughes' IS organizations are integral players in a crucial new trend for the aerospace industry. As defense spending plummets, aerospace companies are seeking to land nondefense government contracts in cooperation with former competitors.

Grumman, for one, recently joined The Boeing Co. and Lockheed Corp. to bid on a program in which they would build a new generation of aircraft, called the AX, first for government, then commercial, use.

Hughes led a team including Loral Aero-Sys, Electronic Data Systems Corp., Applied Research Corp. and the Center for Space and Advanced Technology, that bid on a NASA program to create the Earth Observing System Data and Information System, a research system that would enable scientists to access data from space- and earth-based instruments as well as from existing research to analyze the processes of global change.

However, while aerospace IS chiefs are hoping to help their organizations in these new ventures, they'll have to be patient. "Many companies are examining ways to apply their defense expertise to commercial niches. But it's hard to go from making missiles to coffee makers overnight," says Alexis Allen, a spokeswoman for the Aerospace Industries Association.

Vitiello is a speech writer and freelance writer based in East Brunswick, N.J.

Three-point landing

IS professionals in many industries are facing challenges similar to those in aerospace companies. Here are some tips from their aerospace IS colleagues that may ensure a safe trip to better economic times:

- Restructure the IS area by eliminating layers of reporting relationships. Create teams of technical professionals who unite to solve problems or address business needs and then disband to join other troubleshooting teams.

GE's aerospace division, for instance, delayered the entire company, including IS, so that only five levels exist between engineers and the president. Phil Magrogan, a systems architect at GE, says it is likely that the next IS organizational chart will not show standard boxes and lines. Instead, it will indicate interlocking circles representing people whose job functions mesh to perform certain tasks.

- Rethink business processes by determining how they could be done more efficiently and profitably. Don't just automatically automate or upgrade existing procedures. Then, determine the computer systems that will make the new process function at optimum levels.

Steve Bell, a yield enhancement engineer at Hughes Aircraft in Newport Beach, Calif., says he is responsible for isolating glitches in silicon wafer processing and reshaping technology to eradicate problems.

When errors were cropping up because workers lost track of which wafers had been through the correct number of acid baths and water rinses, Bell examined the process and reconfigured the automated assembly line bench for manufacturing the wafers, eliminating mistakes.

- Realign IS and corporate goals. Develop ways for IS to guide strategic direction in addition to providing necessary support.

According to James F. Sutter, vice president and general manager at El Segundo, Calif.-based Rockwell International Corp., his IS staff implements only that technology that affects his business' basics — reducing manufacturing cycle time, cutting costs and improving product quality.

JILL VITIELLO

CALENDAR

APRIL 5-11

Service Trends Executive Ninth Annual Conference. Boston, April 5-7 — Contact: Dataquest/Ledgeway, Framingham, Mass. (508) 370-6262.

The Information User Association (IUA). Dallas, April 5-9 — Contact: Greg Dummer, IUA, Chicago, Ill. (312) 644-6610.

Virtual Reality East '92. New York, April 6-8 — Contact: Marilyn Reed, Meckler Conference Management, Westport, Conn. (203) 226-6967.

James Martin World Seminar. New Orleans, April 6-10 — Contact: Susan Levine, Extended Intelligence, Chicago, Ill. (312) 346-7090.

Defense System Software Seminar. Boston, April 7-9 — Contact: David Maibor Associates, Inc., Needham Heights, Mass. (617) 449-6554.

Supercomputer Conference. Newport, R.I., April 7-9 — Contact: Dr. John Miguel, Federal Information Processing Council, Middletown, R.I. (401) 841-4591.

Implementing Integrated CASE. Boston, April 9 — Contact: Software Productivity Group, Shrewsbury, Mass. (508) 842-4500.

APRIL 12-18

The Borland International Developers Conference. Monterey, Calif., April 12-15 — Contact: Borland International Developers Conference, CT Meeting Planners, Inc., Monroe, Conn. (203) 261-6227.

United States Society of Wang Users (USSWU). Washington, D.C., April 14 — Contact: USSWU Office, Chicago, Ill. (708) 652-3888.

CIME/Design. Detroit, April 14-16 — Contact: Joe Baxter, CIME/Design, Chadds Ford, Pa. (215) 444-9690.

Auditing Information Systems Computer Contracts. Detroit, April 15 — Contact: Spud Watkins, EDP Auditors Association, Inc., Troy, Mich. (313) 769-8300.

APRIL 19-25

Network Analysis Users Group Conference (NAUG). Monterey, Calif., April 20-24 — Contact: Sandy Moretto, NAUG headquarters, Menlo Park, Calif. (415) 688-2836.

Netcom West '92. Anaheim, Calif., April 21-23 — Contact: Jim Kloiber, Information Development Corporation, Silver Spring, Md. (301) 565-4233.

Supercomputing Japan '92. Yokohama, Japan, April 22-24 — Contact: Meridian Pacific Group, Inc., Mill Valley, Calif. (415) 381-2255.

Synon'92. Atlanta, April 22-25 — Contact: Synon '92, Larkspur, Calif. (415) 461-5000.

APRIL 26 - MAY 2

Computer Audit, Control and Security Conference. Philadelphia, April 26-May 1 — Contact: EDP Auditors Association/Foundation, Inc., Carol Stream, Ill. (708) 682-1200.

Software Maintenance and Re-engineering. Chicago, April 27-29 — Contact: Applied Computer Research, Phoenix, Ariz. (602) 995-5929.

XWorld. New York, April 27-30 — Contact: Jennifer Fischer, SIGS Publications Group, New York, N.Y. (212) 274-0640.

Downsizing/Rightsizing Corporate Computing Conference and Exposition. Los Angeles, April 27-May 1 — Contact: Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-4200.

USE, Inc. Conference. San Francisco, April 27-May 1 — Contact: Carolyn Abell, USE, Inc., Bladensburg, Md. (301) 699-9336.

James Martin World Seminar. Washington, D.C., April 27- May 1 — Contact: Susan Levine, Extended Intelligence, Chicago Ill. (312) 346-7090.

DecWorld '92. Boston, April 27-May 15 — Contact: Royal America, Newton, Mass. (617) 244-2800.

Directions and Implications of Advanced Computing Symposia. Berkeley, Calif., May 2-3 — Contact: Doug Schuler, Seattle, Wash. (206) 865-3832.

MAY 3-9

Information Technology Association of America (ITAA) 76th Management Conference. New Orleans, May 3-6 — Contact: ITAA, Arlington, Va. (703) 284-5333.

ASM'S 45th Information Systems Conference. Montreal, May 3-6 — Contact: Terri Gibbons, Association for Systems Management, Cleveland, Ohio (216) 243-6900.

Pen-based Computer Conference. Boston, May 4-5 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Eastern Communications Forum '92. Rye Brook, N.Y., May 4-6 — Contact: Eastern Communications Forum, Chicago, Ill. (312) 938-3500.

Netcom '92. Hartford, Conn., May 5-6 — Contact: Daniels Productions, Inc., West Hartford, Conn. (203) 561-3250.

Dexpo Spring. Atlanta, May 5-7 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

National On-line Meeting. Medford, N.J., May 5-7 — Contact: Tom Hogan, Learned Information, Inc., Medford, N.J. (609) 654-6266.

MAY 10-16

EDI '92 Conference and Exhibit. Seattle, May 11-13 — Contact: Data Interchange Standards Association, Inc., Alexandria, Va. (703) 548-7005.

ELECTRO '92. Boston, May 12-14 — Contact: Natalie Perlin, ELECTRO '92, Los Angeles, Calif. (310) 215-2976.

Re-engineering: The Implementation Perspective. Chicago, May 12-14 — Contact: Hammer & Co., Cambridge, Mass. (617) 354-5555.

Government Technology Conference/Western Region. Sacramento, Calif., May 13-15 — Contact: GMW Communications, Sacramento, Calif. (916) 443-7133.

MAY 17-23

International Boole & Babbage User Group Conference. Dallas, May 17-19 — Contact: Boole & Babbage, Sunnyvale, Calif. (408) 735-9550.

ICA 1992 Expo and Conference. Atlanta, May 17-21 — Contact: ICA Expo '92 Housing Coordinator, Rogal America, Inc., Newton, Mass. (617) 965-8000.

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Nightmare Scenario #2

THE RUNAWAY CASH SUCKER.

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A lot of executives go pale when they see how much their computer networks are really costing them.

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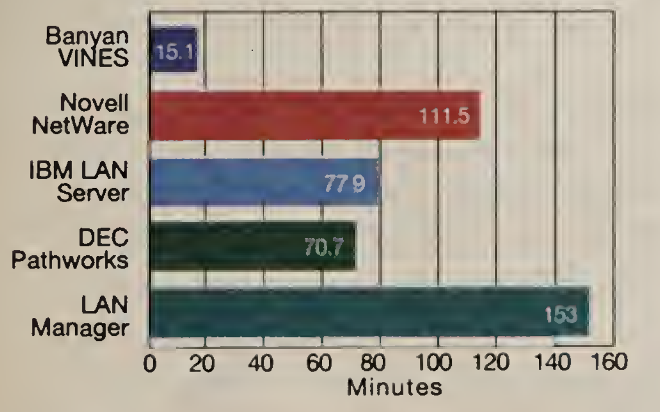
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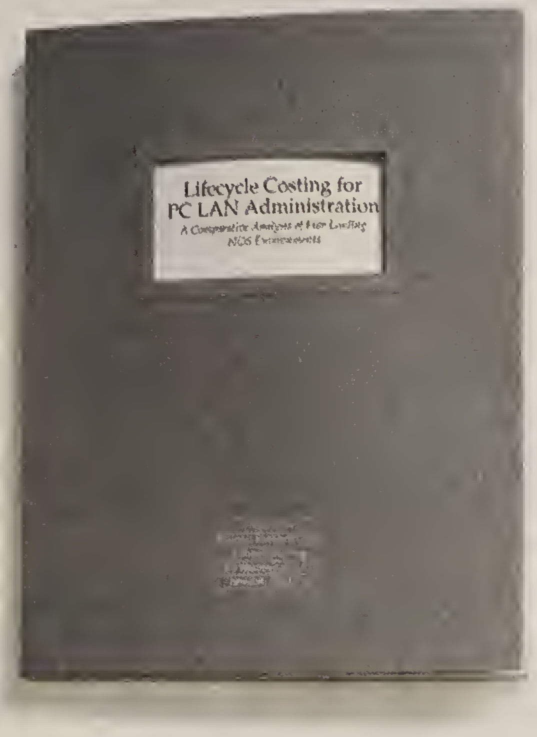

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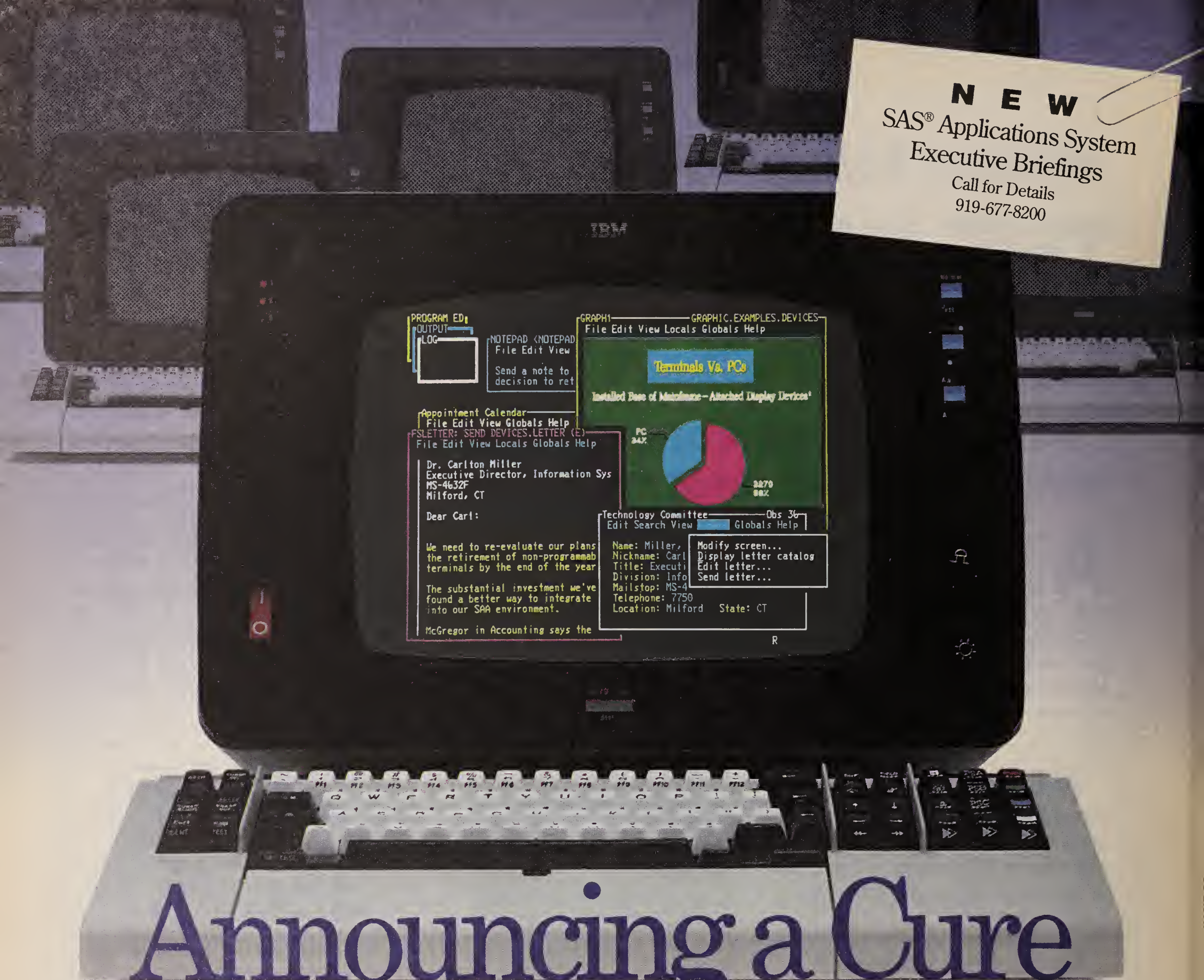

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COMPUTER CAREERS

Certification can't hurt — and may help

When degrees are equal, the extra credentials can be an edge; holders are seen as more professional

BY ALICE BREDIN
SPECIAL TO CW

Not being certified probably won't disqualify you from getting a job, but some hiring managers are starting to favor job candidates who can show they're certified — or they're at least requiring candidates to get certification after they're hired.

"People have been bitten and now they are looking for some reassurance," says George Eggert, executive director of the Institute for Certification of Computer Professionals (ICCP) in Des Plaines, Ill. "If you hire someone [who is not certified] on a contract and something goes wrong down the road, you are out of luck."

"Anyone you hire or contract with is a risk," says Dorothy Deutch, a quality control analyst at the U.S. Department of Commerce in Washington, D.C. "Certification mitigates the risk."

After Deutch received her certificate in quality assurance, the department heeded her suggestion that certification become a requirement on a contract it was awarding. She says certified employees are accountable for their mistakes because they can have their papers revoked.

There are many certification programs across the country designed to set a standard to test the competence level of information systems professionals. Some, like ICCP, give a general test in IS skills, along with tests in elected specialties such as procedural programming, management, systems development and software engineering.

Another popular certification program, sponsored by the Quality Assurance Institute (QAI) in Orlando, Fla., qualifies people to evaluate, identify and solve problems in operations, development and maintenance. Additional, more-targeted programs test one particular type of IS skill or knowledge of one vendor.

Becoming a key

While demand for certification varies by what part of the country a person lives in, where he went to school and whom he works or has worked for, more managers are looking for the word "certified" on potential employees' resumes.

In general, people who have taken the effort to get certified have better work habits than people who have not, says Richard Pawlicki, director of MIS at Culligan International Co. in Northbrook, Ill.

"People who are certified are usually good at design [and] documentation and ask more thorough questions of the user," he says. "Their attitude is of a professional trying to find the best way to serve a user, not just handing over what the user says he or she wants."

Pawlicki says he also prefers a certificate, as references are becoming more difficult to acquire because of increasingly strict privacy laws.

Most companies will not look at a certificate as a replacement for a college degree or work experience; it is more likely to be a plus on the resume of an already accomplished person.

However, some companies place a higher value on certification than others and require employees to become certified when they are hired, Eggert says.

"Insurance companies are used to certification because of all of the certifying involved in their business, and the same goes for accounting firms," he explains. "Consulting firms like it because it indicates that people have a certain level of training."

"Certification demonstrates a certain level of knowledge and lets [employers] know they'll be getting good quality people," says Bob Tipton, MIS director at International Consulting who requires employees at his Littleton, Colo., firm to obtain certification. "I also notice that the personal confidence of employees goes up after they take the test. They feel good about their ability."

Tipton, who is certified himself, says certification enhances the applicant's resume, although he does not require certification until the employee is hired.

Most certificate holders say they decided on their own that they needed to be certified to reach their career goals, although some said that they came to this decision after it came up in job interviews or with peers.

Gary Secen, who received his certification through QAI, says he pursued certification because he "started hearing from people in the industry that companies were frustrated with hiring people who they would discover were not really qualified."

Certificate upkeep

In order to remain certified, certificate holders can either participate in continuous upkeep work, such as attending seminars and lectures and taking workshops, or retake the certification tests. Most certificates are valid for two or more years.

Some people in hiring positions say certification isn't necessary if you have a well-trained pool of potential employees to choose from. Charlie Ho, financial systems manager at Clorox Co. in Oakland, Calif., says he doesn't think certification is necessary for the people he hires.

However, he holds an ICCP certificate because he didn't major in computer science in college, and the test served as a checklist for himself and his staff.

Certification "is not too popular out here on the West Coast because I can find people who have MIS degrees and computer science degrees," Ho says of the candidates that come to him from technically oriented colleges.

Regardless of whether a company encourages employees to get certification, most companies will pay for the tests and often provide or pay for preparatory courses. Preparatory tools come in many forms, including self-help manuals, courses and tapes.

However, there may be some drawbacks to certification as well. In some cases, an employer who isn't certified may be intimidated by a certified professional. According to Tipton, "A potential employer who isn't certified may be put off by someone who is."

Bredin is a free-lance writer based in New York.

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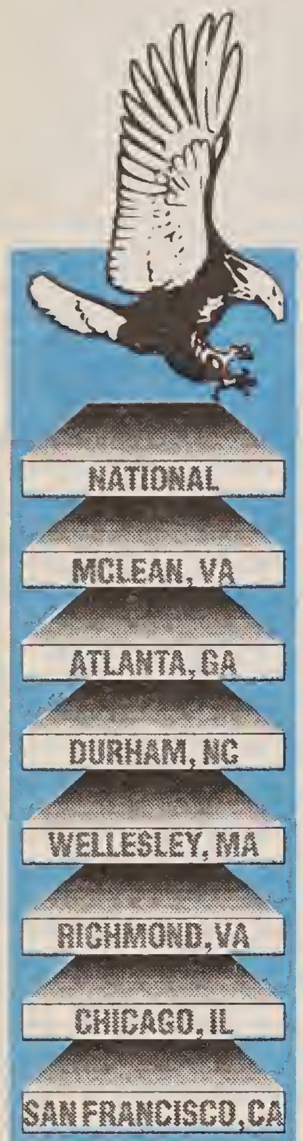

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MANAGING YOUR CAREER

Jan D'Arcy

How to let others know what you know

Talk isn't cheap — especially when it involves conveying difficult or technical concepts clearly. The ability to communicate well is an increasingly prized skill in the information systems marketplace.

The biggest challenge for an IS professional is communicating on many different levels with a variety of groups. End users want to hear about what they can do with a product. They don't want a lot of detail about how it works but about how it can be put to work for them as quickly as possible. However, top managers may expect you to put things in terms of payback potential and long-term strategy.

Speaking in the right language for a variety of audiences takes some practice, but here are some easy ways to get yourself on the right track:

▶**Find common ground with the audience, and begin at their level of knowledge.** One IS professional says he puts on his "customer hat" to empathize with the end user: "I go into a meeting picturing myself in that person's job. Even though the computer system is my whole world, I realize it is merely a tool for my customer to get his job done."

▶**Take responsibility for the audience's ability to understand specialized information.** Strive for clarity, and use concrete words and examples. Associate new information with the familiar. Break down the material into smaller, cohesive units that the audience can easily understand and remember.

For example, a district manager at a computer corporation, when addressing a nontechnical audience of writers on the use of various word processing programs, breaks down the unfamiliar phrase "file allocation table" accordingly: "If you walk into a library, you need a card catalog or some system to find out where certain books are located. Your computer has to know where information is located. A file allocation table enables the disk to find it for you."

▶**Empower your audience.** Just because complex concepts are simplified, that doesn't mean they should be diluted.

Albert Einstein once said, "Everything should be made as simple as possible, but not simpler." Translate complex concepts in a way that adds to a person's knowledge. Assume your audience is smart but not up-to-date in your discipline.

▶**Be responsive to feedback.** Listen quietly and reflectively. A systems development manager says he listens carefully to the way users ask questions. By rephrasing the question, he makes sure it is really the question the person wants answered.

▶**Use stories and analogies.** Audiences will remember them longer than dry facts and statistics. When having to persuade upper management to allocate funds, people or time for maintenance programming, one IS manager finds the following analogy helpful:

"They think that a system is like a painted picture. Once it is designed and developed, it is finished and you can just walk away from it. So I use an analogy of the trucks in the trucking department. They have to keep the trucks in repair and when they buy a second truck, they still need to maintain the first truck and all the trucks that are bought after that. They might not know data processing, but they do understand their business," he says.

▶**Understand yourself so you can make productive communication choices.** Be aware of your own motivating ideas and emotions. Know your "hot buttons." What happens when you arrive at a meeting and find fewer attendees than expected, handouts missing or constant interruptions? Can you use humor to lighten up a stressful situation? Do you get impatient when someone fails to grasp the intricacies of software? Challenge yourself to translate complex material so that your audience can easily incorporate the information into its experience base.

> "EVERYTHING SHOULD BE made as simple as possible, but not simpler."
>
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▶**Be prepared to modify your plan.** An individual in business applications says she starts out with a plan but expects that she will have to adapt it to the reality of each situation.

▶**Don't presume a single correct answer.** Explore several different solutions to communications obstacles and their consequences. Ask yourself: "Is there a different way of approaching the matter?"

▶**Be aware that every communication situation will be unique.** San Francisco 49ers football star Joe Montana knows all the rules, but that's not what makes him a great quarterback. He evaluates each situation and makes specific, creative choices that another player might fail to consider.

What works in football also works in IS. IS professionals need to adapt to situations if they want to maintain harmonious relationships with a variety of people. A person will use a hammer every time if it's his only tool.

Employing these techniques will make your work easier and more productive and reduce problems of dealing with superiors, peers, subordinates or clients. Effective communication skills will make a significant contribution to your professional success.

D'Arcy is author of *Technically Speaking — Proven Ways to Make Your Next Presentation a Success*, published by AMACOM books. She operates a speech and videoconferencing consulting firm in Bellevue, Wash.

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personal computers	73,925
technical workstations	30,943
Software Vendor	160,264
for large-scale systems	71,152
for medium-scale systems	81,799
for small-scale systems	72,212
for personal computers	66,366
for technical workstations	26,022
Non-CPU Computer Products Manufacturer	34,311
VAR/Dealer/Retailer	44,773
DP Service Bureau/ Contract DP Services	52,375
Consulting/Planning	112,149
Manufacturer (not computers)	229,608
Insurance	62,539
Healthcare	57,788
Banking/Financial Services	123,348
Government Federal/State/Local	107,915
Business Service (except DP)	35,940
Communications Systems	30,264
Public Utilities	43,687
Transportation	49,151
Wholesale/Retail Trade	82,674
Education	91,073

SOURCE: Skill Survey of **Computerworld's** Audience, June 1991.

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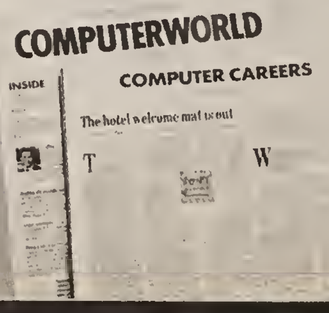

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Some signs of life in Boston

BY JILL VITIELLO
SPECIAL TO CW

There are two glimmers of hope in Boston's bleak hiring situation: brokerage firms and other non-bank financial services firms.

Although they would not confirm the reports, corporations such as Fidelity Investments and Integrated Systems Technologies are said to be hiring information systems professionals.

While some recruiters are waiting to see if the improved situation in one industry will lead to more opportunities in others, the more optimistic are confident the upturn indicates the end of the recession.

Steve McMahan, managing director at Source EDP in Boston, acknowledged his doubts about the likelihood of a return to the days when Boston and environs were known as the Silicon Valley of the Northeast and industry and high-tech companies were booming. "If you use 1986 as a benchmark for job opportunities, you'll be disappointed," he says.

Even if the optimistic forecasters prove correct, Boston's been through a rough time in the past two years — particularly for middle managers (see related story). The job market is flooded with people bearing middle-level manager credentials. Unfortunately, their services are no longer required in streamlined organizations.

"We used to think that management experience would make our jobs stable," says Allan K. Stern, director of management information services for the city of Boston. "Today, the people who believed that are hurting the worst."

Baby boomers gone bust

The plight of the laid-off IS manager is one aspect of the recession on which everyone in the Boston IS community agrees: There are simply no jobs for them.

"The baby boomers in IS were reaching middle-manager ranks just as companies began reducing their need for those jobs," McMahan says.

However, managers who stayed on top of the new technology, such as client/server and networked personal computers, are remaking themselves as high-level analysts. "Many are trying to reenter the work force after harkening back to the technical skills they were paid to use earlier in their careers," Stern says.

That's a good strategy — given that most employers want to fill jobs with hands-on systems analysts who have experience in today's hottest technologies, including client/server, DB2, computer-aided software engineering tools, C language, Unix and networking.

Of course, staying current is not always possible because many Boston-area companies have deferred expenditures on new technology, leaving IS professionals little opportunity to gain the day-to-day, hands-on experience that companies value.

The scarcity of on-the-job training is particularly difficult for junior IS professionals with one or two years' experience. When companies are hiring so sparingly, they want people with skills already intact.

"With declining revenue streams, I'm under mounting pressure to deliver services at lower rates," says Stern, who says he relies on staffers with skills in a variety of platforms to develop systems solutions.

With so much anxiety over the short-term outlook in Boston, it is encouraging to note that many IS professionals predict better times ahead this year. The reason for optimism about the long-term future of IS is the direction of technology: As the cost of equipment falls, the cost of integration falls, causing the cost of automating new business processes to drop. That's when companies will be able to afford to harness the benefits of technology and apply them to their businesses.

"There are hundreds and thousands of opportunities for automation just waiting for the new technology to be delivered on less expensive platforms," says Al Hyland, director of worldwide systems at Polaroid Corp. in Waltham, Mass. "We've got 20 or 30 years of opportunities in front of us."

Vitiello is a speech writer and free-lance writer based in East Brunswick, N.J.

Hurting

Many Boston-area companies were hit hard and early by the national recession and continue to be pelted with one difficult year after the next.

During the last three years, Allan K. Stern, director of management information services for the city of Boston, reports that his office cut the IS staff from 125 to 95 and slashed the budget in half. Two large IS shops, Boston Edison Co. in Boston and Polaroid in Waltham, Mass., have been hiring at replacement levels only.

Smaller shops, such as The Biltrite Corp., also in Waltham, have reported no attrition for several years, according to the firm's manager of MIS, Frank Re.

"People don't want to run the risk of moving to a company that might not be financially healthy, even if the new job is more lucrative," Stern says.

JILL VITIELLO

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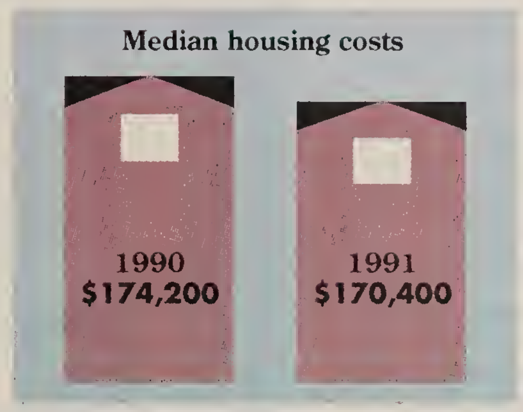

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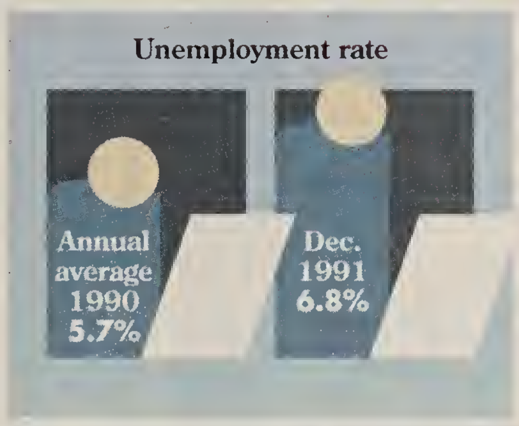

Source: U.S. Department of Labor, Bureau of Labor Statistics

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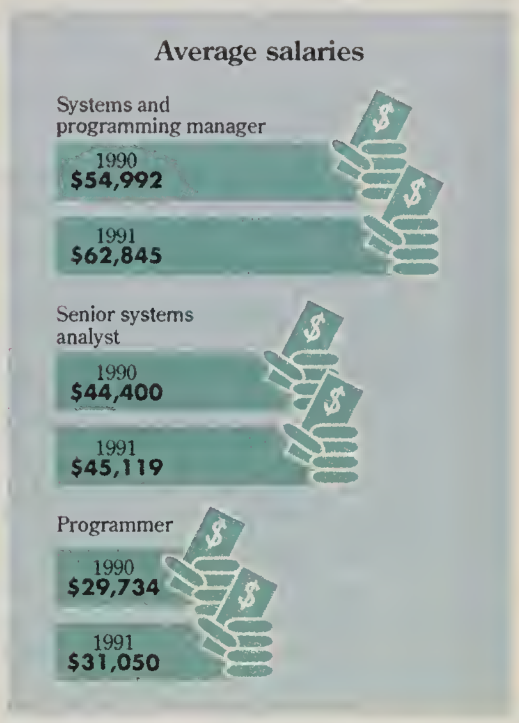
Source: Greater Boston Chamber of Commerce



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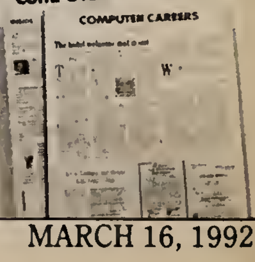

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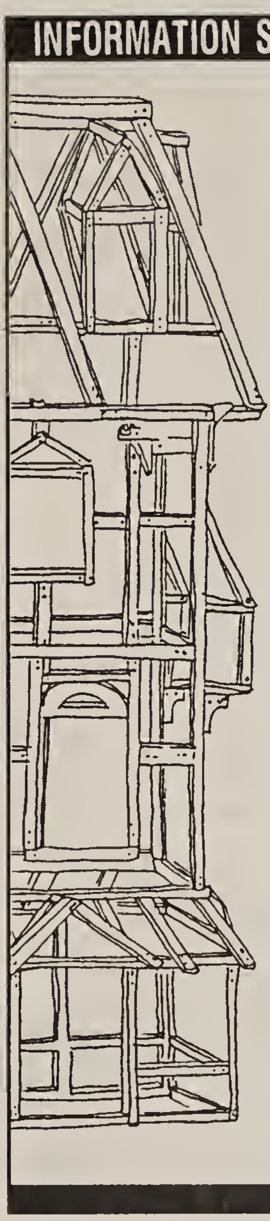

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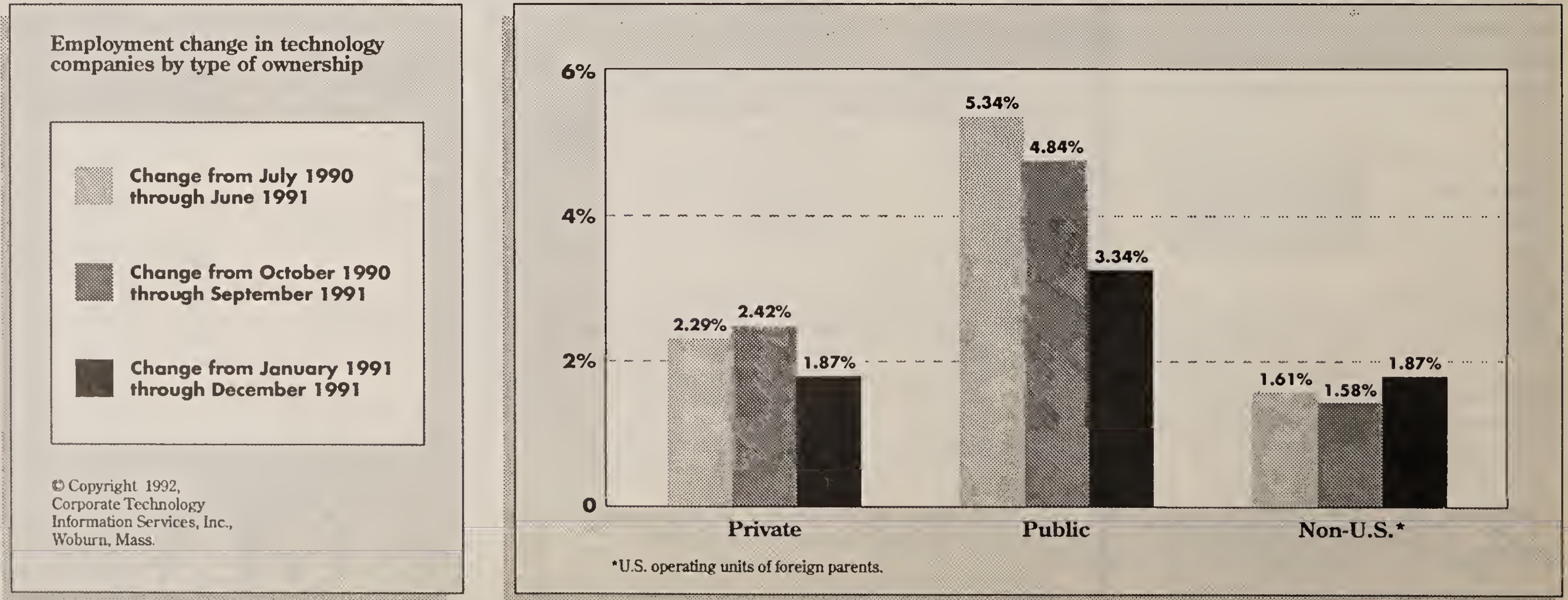

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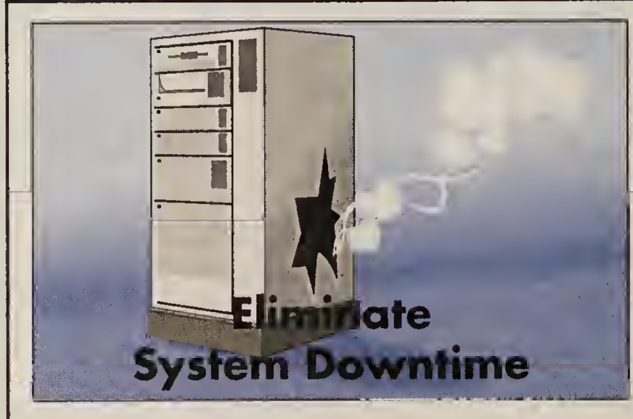

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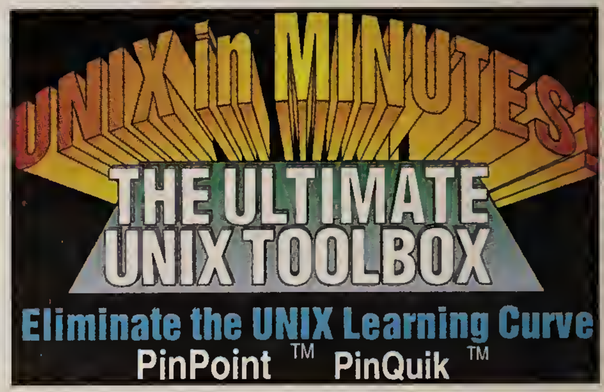

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MARKETPLACE

Software suites' ups, downs

Bundled office packages prove to be cost-effective and require less support

BY ALAN RADDING
SPECIAL TO CW

When BCM Atlantic, an engineering firm based in Plymouth Meeting, Pa., standardized on Microsoft Corp.'s suite of software applications — called Office — it hoped to give users a better way to share information among their applications and shorten their learning curve for the different software programs they needed to use.

Since then, the company has increased its productivity by allowing users to run multiple applications easily and take better advantage of the capabilities of their personal computers, says Karen Dicks, MIS director. Before using Office, BCM's typical employees used two applications regularly. Now, the same people feel comfortable with four, she says.

Software suites are groups of freestanding applications, sold as sets, that share the same basic user interface. Besides increasing productivity, one of their main selling points is cost. These sell at substantial discounts — some 75% less — than a group of individually purchased software programs, and they promise higher levels of integration and consistency among applications.

PC software vendors are just beginning to package their individual PC products into suites, but users must be careful to shop for more than a good price. The suite should contain the applications that users prefer and add a higher level of integration across individual products.

In theory, software suites can combine any PC applications — word processing, databases, electronic mail, communications, spreadsheets and other functions — allowing users to move easily from application to application, transfer information among applications and use one interface for all.

Software suite

A group of freestanding applications that share a consistent user interface and are sold as a set

Two choices

There are only two vendors that market actual software suites: Microsoft (Office) and Lotus Development Corp. (Smart Suite, which is available on a limited basis in North America).

Office, priced at $750, includes Microsoft's Windows versions of Word, Excel, Powerpoint and Mail. Smart Suite, priced between $795 and $895, includes Windows versions of Lotus 1-2-3, Freelance Graphics, Ami Pro and CC:Mail.

Vendors of multiple PC products — such as Computer Associates International, Inc., WordPerfect Corp., Symantec Corp. and Borland International, Inc. — have groups of products that can be packaged and sold as suites but aren't yet formally marketed as such.

CA sells CA-Cricket Presents, CA-Cricket Image, CA-Cricket Graph and CA-Cricket Draw III individually. A user could buy all of them in quantity and negotiate a discount, but that's not a suite. "There's no consistent interface," says Jeffrey Tarter, publisher of "Soft Letter," an industry newsletter based in Waltham, Mass.

Integrated PC applications such as Lotus' Symphony, LotusWorks, Microsoft Works and WordPerfect's Executive combine popular business applications and telecommunications, but they are also not PC suites. They consist of truncated versions of the applications, offering less functionality than their stand-alone counterparts.

In software suites, the applications are packaged together in a single box, each with its own documentation and separate installation program. To be effective, the applications must be tightly integrated so users can move data easily from one to the other; they should also have similiar interfaces, allowing users to easily transfer their skills to the other applications.

Potential payoffs

For most users, buying applications in a suite means less cost, but the savings are not the main advantage. "Price is a onetime issue," Tarter says, but training and support continue to pay back long after the product has been purchased.

Because suites provide consistent behavior and a consistent interface — meaning that the same commands or icons do the same things in each application — training and support are much simpler.

Integration of the programs under Windows is another benefit. Object Linking and Embedding (OLE) allows users to activate one application from inside another, such as by clicking on a spreadsheet icon embedded in a word processing document.

However, users and analysts report that outside the Office suite, OLE is a very difficult and unstable feature.

Of course, there are drawbacks to suites as well. User acceptance may not be as quick if users feel they're giving up their favorite applications in favor of the suite version. Vendors also don't allow substitutions of applications within a suite.

However, the biggest potential trade-off is that users may not get the best-of-the-breed product for each application. By trying to provide many different types of applications, vendors may not always offer the best in each category. Users and analysts, however, question the value of trying to maintain a portfolio of the best applications.

"The best application is like taking a snapshot: It will change the next moment. And you can't keep moving a corporation to new applications," says Robert Larson-Hughes, information systems director at Harmon Contract W.S.A., Inc., a construction company based in Minneapolis. Larson-Hughes says he is concerned about the expense of training and supporting 450 users every time a product changes.

A good time for an organization to consider a suite is when it is switching environments and intends to upgrade its applications anyway. Larson-Hughes says he wanted a set of Windows applications after his company adopted Lotus' Windows-based Notes. The company looked at Office, but with Notes and Lotus 1-2-3 already widely used, it made no sense from a training standpoint to add another vendor, he says.

Radding is a free-lance writer based in Newton, Mass.

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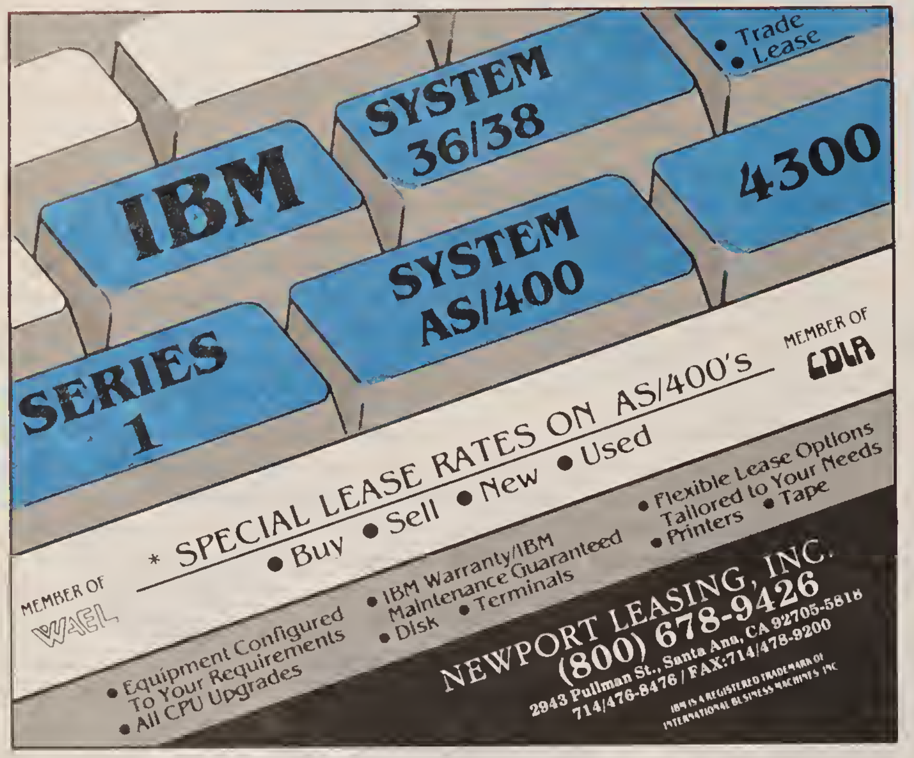
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RFP No. 2177, due Fri, 4/10/92 at 3:30 p.m. for a LAN-based CD-ROM server to manage and support multiple databases for MISSISSIPPI STATE UNIVERSITY.

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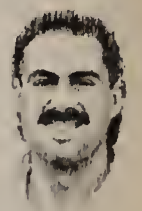
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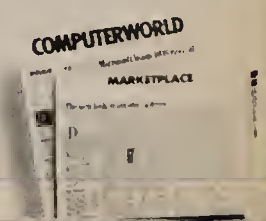

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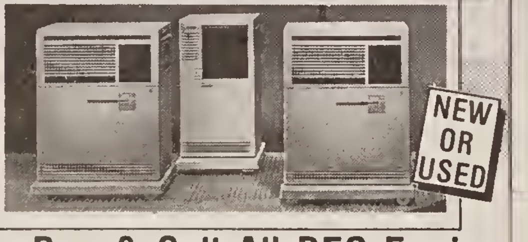

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The BoCoEx index on used computers

Closing prices report for the week ending March 6, 1992

	Closing price	Ask	Bid
IBM XT Model 089	$300	$400	$100
AT Model 099	$400	$525	$150
AT Model 239	$550	$650	$175
AT Model 339	$700	$1,000	$250
PS/2 Model 30 286	$650	$900	$300
PS/2 Model 60	$700	$900	$325
PS/2 Model 80	$2,050	$2,100	$1,100
PS/2 Model 90	$4,300	$4,600	$3,300
Compaq Portable II	$450	$500	$375
Portable 286	$900	$1,000	$250
Portable 386	$2,000	$2,125	$1,000
SLT 286	$700	$900	$400
LTE 286	$950	$1,300	$500
Deskpro 286E	$650	$1,000	$325
Deskpro 386/20	$2,000	$2,200	$1,100
Apple Macintosh Plus	$700	$750	$475
SE	$950	$1,050	$650
IIX	$2,900	$3,250	$2,000
IICI	$3,500	$3,800	$2,460
IIFX	$4,300	$4,900	$3,700

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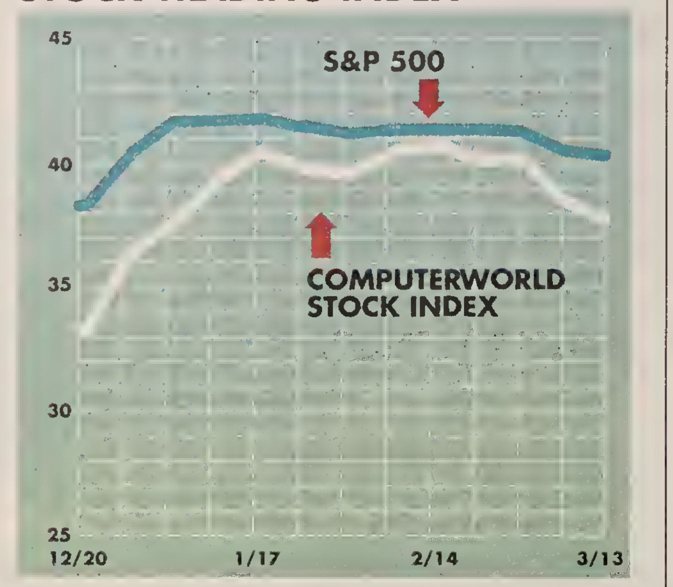
STOCK TRADING INDEX



Industry Almanac

ANALYSIS IN BRIEF

Growth Stock Review: Easel Corp.
Paul Bloom
Volpe, Welty & Co.
San Francisco
March 2, 1992

Stock in **Easel Corp.** (EASL) will probably come under intense price pressure as rivals in the computer-aided software engineering (CASE) market steal Easel's thunder. The company had virtually controlled one corner of the CASE market: tools for building graphical user interfaces (GUI). But Easel's success with products such as Easel Workbench is transitory and related in part to IBM's marketing help.

Major CASE players, including **Intersolv, Inc.** (ISLI), **Andersen Consulting** and **Texas Instruments, Inc.** (TXN), are horning in on the GUI market and doing Easel one better by offering interface tools as part of a broader client/server code-generation strategy. Besides GUI tools from CASE vendors, many other companies are also introducing related products that are likely to compete with Easel.

Fiscal year 1992 could be a record year for Easel financially, as the company rides the success of having previously led the GUI pack. However, during the second half of this year, the large variety of tools that offer GUI and client/server capability could begin to impact Easel, creating uncertainty about 1993 results. With the company's stock selling at a 47.5 multiple of anticipated 1992 earnings per share, investors should avoid the shares.

RECOMMENDATION CHANGE

UPGRADED FROM MODERATELY ATTRACTIVE TO VERY ATTRACTIVE: **Microsoft Corp.** (Donaldson, Lufkin & Jenrette Securities Corp.). The pent-up demand for second-generation Windows offerings scheduled for launch this spring should add more fuel to Microsoft's (MSFT) stock price growth rate. In addition to Windows 3.1, the company is expected to ship several key Windows applications, including Excel 4.0, Mail 3.0, PowerPoint 3.0 and a new as-yet-unnamed database manager. Microsoft plans to spend heavily on a television advertising campaign to promote the new product blitz.

KIM S. NASH

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, MARCH 13, 1992

TOP PERCENT GAINERS

Printronix Inc.	33.33
Information Resources (H)	17.55
Lotus Development*	17.49
Mips Computer Systems	16.85
Sequoia Systems Inc.	15.31
Parametric Technology	14.56
Televideo Systems (H)	14.29
VLSI Technology	13.43

TOP PERCENT LOSERS

Computer Automation Inc.	-22.22
Silicon Graphics (H)	-19.81
Fibronix Int'l Inc.	-18.92
Gandalf Technologies Inc.	-18.18
Artel Communication Corp.	-16.67
Goal Systems Int'l	-16.67
Data Switch Corp.	-15.79
AST Research Inc.*	-14.81

TOP DOLLAR GAINERS

Lotus Development*	5.75
Information Resources (H)	4.13
Policy Management Sys. (H)	3.88
Parametric Technology	3.75
Hewlett Packard Co.* (H)	3.38
Symantec Corp.	3.25
IBM*	3.00
Microsoft Corp.*	2.75

TOP DOLLAR LOSERS

Silicon Graphics (H)	-5.25
Matsushita Electronics (L)	-3.63
AST Research Inc.*	-3.00
Micron Technology (H)	-2.75
Goal Systems Int'l	-2.50
Oracle Corp.* (H)	-2.50
Informix Corp. (H)	-2.38
Borland Int'l Inc.*	-2.25

Communications and Network Services Off 0.20%

Exch	52-Week Range			March 13 Close	Wk Net Change	Wk Pct Change
OTC	15.00	6.75	3 COM Corp.* (H)	13.50	1.00	8.00
NYS	69.00	55.75	American Info Techs Corp.*	59.25	0.00	0.00
NYS	41.38	32.50	AT&T*	38.25	0.38	0.99
OTC	4.25	1.25	Artel Communication Corp.	2.50	-0.50	-16.67
NYS	52.75	41.75	Bell Atlantic Corp. (L)	42.38	0.13	0.30
NYS	54.13	45.00	Bellsouth Corp. (L)	45.38	0.25	0.55
NYS	9.38	4.75	Bolt, Beranek & Newman	6.38	0.75	13.33
NYS	65.88	30.25	Cabletron Systems (H)	58.13	1.00	1.75
OTC	31.00	11.75	Chipcom Corp.	26.25	-1.00	-3.67
OTC	87.25	21.00	Cisco Systems Inc. (H)	79.25	1.25	1.60
OTC	35.25	13.75	Compression Labs Inc.	25.13	2.00	8.65
OTC	4.75	1.50	Data Switch Corp.	2.00	-0.38	-15.79
NYS	23.63	12.38	Digital Comm. Assoc.*	21.13	0.13	0.60
OTC	21.50	8.50	Digital Systems Int'l Inc.	14.13	0.13	0.89
OTC	9.75	3.63	DSC Communications	5.06	-0.13	-2.41
OTC	12.38	5.00	Fibronix Int'l Inc.	7.50	-1.75	-18.92
OTC	36.25	11.00	Filenet Corp. (H)	34.00	2.50	7.94
OTC	3.75	1.13	Gandalf Technologies Inc.	2.25	-0.50	-18.18
OTC	2.69	1.19	Gateway Communications	1.63	0.06	3.97
NYS	5.25	2.13	General Datacomm Inds. (H)	4.63	0.00	0.00
ASE	5.88	0.50	Go Video (H)	4.50	0.00	0.00
NYS	35.00	28.13	GTE Corp.*	30.13	0.00	0.00
NYS	70.63	50.00	ITT Corp. (H)	63.38	-0.50	-0.78
OTC	36.13	24.63	MCI Commmunications Corp. (H)	32.75	-0.75	-2.24
OTC	14.50	5.00	Microcom Inc.	13.00	1.25	10.64
NYS	18.25	6.88	Network Equipment Tech.*	15.50	0.75	5.08
OTC	25.50	6.75	Network General	22.25	0.00	0.00
OTC	20.00	10.50	Network Systems Corp.	12.88	-0.63	-4.63
OTC	14.88	5.00	Newbridge Networks Corp. (H)	13.88	-0.13	-0.89
NYS	49.25	29.88	Northern Telecom Ltd.* (H)	46.13	-0.50	-1.07
OTC	65.00	22.63	Novell Inc.*	58.75	1.25	2.17
NYS	82.38	68.00	Nynex Corp.*	72.63	0.63	0.87
OTC	37.50	16.50	Octel Communications Corp.(H)	33.75	0.75	2.27
OTC	11.63	5.63	Penril Data Comm. Ntwks.	7.75	-0.88	-10.14
OTC	53.00	19.75	Picturetel Corp. (H)	47.00	2.50	5.62
OTC	18.75	9.75	Proteon Inc. (H)	15.75	0.50	3.28
NYS	19.75	11.63	Scientific Atlanta Inc. (H)	17.38	-0.25	-1.42
NYS	66.00	49.00	Southwestern Bell Corp.	58.25	0.13	0.22
OTC	47.00	14.25	Synoptics Communications	23.00	0.00	0.00
NYS	31.50	21.00	United Telecom (L)	21.88	0.00	0.00
NYS	40.13	33.38	U S West Inc. (L)	34.88	1.13	3.33
OTC	41.25	21.25	Wellfleet Communications	35.38	2.13	6.39

PC / Workstations Off 1.89%

Exch	52-Week Range			March 13 Close	Wk Net Change	Wk Pct Change
OTC	20.75	6.50	Advanced Logic Research (L)	7.50	-0.25	-3.23
OTC	3.63	1.50	Alpha Microsystems	0.00	-0.13	-5.26
OTC	73.25	40.25	Apple Computer Inc.*	63.13	-0.88	-1.37
OTC	32.75	14.50	AST Research Inc.*	17.25	-3.00	-14.81
NYS	21.63	10.13	Commodore Int'l	14.38	0.63	4.55
NYS	67.00	22.13	Compaq Computer Corp.*	28.75	-0.63	-2.13
OTC	39.50	20.25	Dell Computer Corp. (H)	35.50	-0.75	-2.07
OTC	7.75	3.00	Everex Systems Inc. (H)	6.88	0.00	0.00
NYS	34.00	21.25	Harris Corp. (H)	31.75	0.25	0.79
NYS	78.25	44.50	Hewlett Packard Co.* (H)	77.38	3.38	4.56
OTC	20.88	7.88	Mips Computer Systems	13.00	1.88	16.85
NYS	29.75	13.25	Silicon Graphics (H)	21.25	-5.25	-19.81
OTC	38.63	20.75	Sun Microsystems Inc.*	32.50	1.50	4.84
NYS	36.50	23.38	Tandy Corp.*	29.75	-0.38	-1.24
NYS	11.13	5.13	Zenith Electronics (H)	9.00	-0.25	-2.70
OTC	25.50	13.25	Zeos International Ltd.	14.75	-1.50	-9.23

Large Systems Off 0.45%

Exch	52-Week Range			March 13 Close	Wk Net Change	Wk Pct Change
ASE	20.63	11.63	Amdahl Corp.* (H)	18.00	0.50	2.86
OTC	2.63	0.88	Computer Automation Inc.	0.88	-0.25	-22.22
NYS	13.38	7.50	Control Data Corp.	12.25	0.25	2.08
NYS	19.75	8.88	Convex Computer	14.38	0.13	0.88
OTC	19.63	4.13	Cray Computer	5.88	-0.13	-2.08
NYS	52.25	31.50	Cray Research Inc.*	42.75	1.88	4.59
NYS	22.50	10.50	Data General Corp.	10.50	-1.00	-8.70
NYS	76.88	48.50	Digital Equipment Corp.*	59.88	1.63	2.79
NYS	128.13	83.50	IBM*	89.38	3.00	3.47
NYS	134.63	96.50	Matsushita Electronics (L)	96.50	-3.63	-3.62
OTC	29.50	10.75	Pyramid Technology	16.00	0.25	1.59
OTC	18.50	7.50	Sequent Computer Sys.	14.38	0.00	0.00
OTC	18.38	10.13	Sequoia Systems Inc.	14.13	1.88	15.31
NYS	54.25	27.25	Stratus Computer Inc.* (H)	51.25	0.25	0.49
NYS	17.63	9.50	Tandem Computers Inc.*	12.63	-0.13	-0.98
OTC	4.75	1.25	Tandon Corp.	1.63	0.00	0.00
NYS	11.75	3.25	Unisys Corp.* (H)	9.13	-0.25	-2.67
ASE	7.50	2.00	Wang Labs Inc. (b)* (H)	6.25	-0.13	-1.96

Software & DP Services Off 0.07%

Exch	52-Week Range			March 13 Close	Wk Net Change	Wk Pct Change
OTC	68.50	41.25	Adobe Systems Inc.	52.00	1.50	2.97
OTC	13.25	3.50	AI Corp. (H)	9.38	-0.13	-1.32
OTC	59.88	28.00	Aldus Corp. (L)	28.00	-1.25	-4.27
OTC	19.75	10.13	American Software Inc. (H)	16.88	0.25	1.50
OTC	20.00	7.13	Ask Computer Systems (H)	17.25	-1.25	-6.76
OTC	62.25	23.25	Autodesk Inc. (L)	29.75	1.75	6.25
OTC	37.75	17.00	Bachman Info. Systems (H)	25.75	0.50	1.98
OTC	42.50	25.88	BGS Systems Inc. (H)	36.75	-1.75	-4.55
OTC	79.00	33.00	BMC Software Inc.	62.50	0.50	0.81
OTC	18.50	8.75	Boole & Babbage (H)	17.25	-0.13	-0.72
OTC	86.75	39.50	Borland Int'l Inc.*	67.75	-2.25	-3.21
OTC	11.25	4.75	CE Software	8.50	-0.63	-6.85
ASE	20.63	9.75	Cheyenne Software Inc. (H)	19.38	-0.38	-1.90
OTC	20.88	7.50	Cognos Inc.	9.75	0.00	0.00
NYS	17.00	7.25	Computer Associates* (H)	15.75	0.63	4.13
OTC	22.75	12.00	Comshare Inc.	16.00	0.00	0.00
OTC	47.88	15.00	Easel Corp.	40.63	2.63	6.91
OTC	16.25	9.25	Goal Systems Int'l	12.50	-2.50	-16.67
OTC	32.50	11.50	Group I Software	20.00	-1.50	-6.98
OTC	7.00	4.00	Hogan Systems Inc.	5.50	-0.25	-4.35
OTC	36.25	16.00	Information Resources (H)	27.63	4.13	17.55
OTC	33.00	4.88	Informix Corp. (H)	26.00	-2.38	-8.37
OTC	3.63	1.06	Intellicorp Inc.	1.88	-0.25	-11.76
OTC	31.50	16.25	Intergraph Corp.	18.75	0.25	1.35
OTC	15.00	4.88	Interleaf Inc. (H)	12.75	-0.13	-0.97
OTC	20.25	7.38	Intersolv Inc.	18.00	1.00	5.88
OTC	43.25	10.50	Knowledgeware Inc.	17.50	-1.00	-5.41
OTC	45.25	20.25	Legent Corp.* (H)	39.50	-1.50	-3.66
OTC	40.75	18.00	Lotus Development*	38.63	5.75	17.49
OTC	7.38	2.38	Meca Software	6.13	0.13	2.08
OTC	22.25	11.50	Mentor Graphics (H)	18.25	0.25	1.39
OTC	30.25	9.75	Micrografx Inc.	24.25	0.50	2.11
OTC	133.25	60.50	Microsoft Corp.*	121.00	2.75	2.33
OTC	21.13	7.00	Oracle Corp.* (H)	17.00	-2.50	-12.82
OTC	35.63	10.50	Parametric Technology	29.50	3.75	14.56
OTC	10.75	5.88	Phoenix Technologies (H)	8.88	-0.50	-5.33
OTC	25.25	9.00	Platinum Technology	20.25	1.75	9.46
OTC	46.50	27.50	Progress Software Corp.	43.75	-0.25	-0.57
OTC	26.63	11.50	Quarterdeck Office Sys.	18.75	-1.50	-7.41
OTC	29.75	10.00	Rasterops	22.00	0.75	3.53
OTC	17.25	6.75	Ross Systems (H)	15.50	-0.50	-3.13
OTC	29.13	12.50	Software Publishing Corp.	24.63	1.50	6.49
OTC	8.50	2.00	Software Toolworks Inc.	6.00	-0.25	-4.00
OTC	7.25	1.75	Spinnaker Software	5.25	0.13	2.44
OTC	16.50	6.25	State of the Art (H)	14.13	-0.38	-2.59
NYS	25.25	10.88	Sterling Software Inc. (H)	21.88	0.00	0.00
OTC	30.00	15.38	Struct. Dynamics Research	21.00	0.25	1.20
OTC	31.75	15.00	Sybase Inc. (H)	25.00	0.75	3.09
OTC	51.00	19.50	Symantec Corp.	44.25	3.25	7.93
NYS	15.50	6.38	Systems Center Inc.*	10.88	-0.50	-4.40
OTC	31.00	8.34	System Software Assoc. (H)	28.50	0.25	0.88
OTC	6.63	2.44	Wordstar	4.00	0.00	0.00

Semiconductors Off 0.75%

Exch	52-Week Range			March 13 Close	Wk Net Change	Wk Pct Change
NYS	21.50	8.38	Advanced Micro Devices	17.88	0.75	4.38
NYS	12.50	7.00	Analog Devices Inc.	9.00	-0.38	-4.00
OTC	18.88	6.75	Atmel Corp.	10.75	-0.38	-3.37
OTC	14.13	7.00	Chips and Technologies (H)	12.50	1.38	12.36
NYS	24.50	13.38	Cypress Semiconductor Corp	16.63	0.50	3.10
NYS	12.38	6.25	Dallas Semiconductor	8.50	-0.25	-2.86
OTC	68.75	38.50	Intel Corp.* (H)	64.00	1.75	2.81
NYS	12.50	6.50	LSI Logic Corp.	8.00	-0.50	-5.88
NYS	22.38	10.88	Micron Technology (H)	16.13	-2.75	-14.57
NYS	82.50	54.00	Motorola Inc.* (H)	75.38	0.13	0.17
NYS	11.50	3.88	National Semiconductor* (H)	10.38	-0.38	-3.49
OTC	27.00	13.00	Sierra Semiconductor	17.75	-1.25	-6.58
NYS	47.63	26.00	Texas Instruments*	33.38	-1.00	-2.91
OTC	12.25	5.88	VLSI Technology	9.50	1.13	13.43
OTC	16.75	4.50	Weitek	5.88	-0.38	-6.00
ASE	6.25	2.00	Western Digital Corp.	4.00	0.00	0.00
OTC	32.50	18.50	Xilinx	28.25	0.75	2.73
OTC	11.50	4.25	Zilog Inc. (H)	8.63	-0.25	-2.82

Peripherals and Subsystems Up 1.45%

Exch	52-Week Range			March 13 Close	Wk Net Change	Wk Pct Change
OTC	2.75	1.00	Apertus Technologies	1.44	0.00	0.00
OTC	9.13	2.75	Archive Corp.	7.50	0.56	8.10
OTC	24.00	10.88	Banctec Inc. (H)	22.50	0.88	4.05
OTC	23.50	4.88	Cambex Corp. (H)	17.75	-0.38	-2.07
ASE	11.75	7.00	Cognitronics Corp.	10.50	0.38	3.70
NYS	29.00	12.50	Conner Peripherals*	21.00	1.13	5.66
ASE	59.00	9.63	Dataram Corp. (H)	48.00	-2.00	-4.00
NYS	16.88	4.88	EMC Corp.	14.75	0.25	1.72
OTC	11.25	4.75	Emulex Corp.	5.75	-0.13	-2.13
OTC	23.00	14.75	Evans & Sutherland	17.75	-1.25	-6.58
OTC	40.63	13.38	Exabyte (H)	34.63	-1.13	-3.15
OTC	27.25	14.75	Intelligent Info. Systems (H)	25.75	-0.75	-2.83
OTC	11.25	4.00	Iomega Corp. (H)	9.13	-1.00	-9.88
OTC	32.50	14.50	IPL Systems Inc. (H)	29.50	2.75	10.28
OTC	24.50	11.75	Komag Inc.	14.75	-0.50	-3.28
OTC	11.75	1.63	Maxtor Corp.* (H)	11.00	0.38	3.53
OTC	18.00	5.50	Micropolis Corp.	11.25	-0.25	-2.17
NYS	98.75	83.50	3M Corp	90.00	-0.38	-0.41
OTC	10.75	3.50	Printronix Inc.	6.00	1.50	33.33
NYS	26.75	11.25	QMS Inc.	11.25	-1.25	-10.00
OTC	18.13	8.88	Quantum Corp.	16.38	-0.25	-1.50
OTC	12.25	5.00	Radius Inc.	10.25	0.25	2.50
NYS	12.88	5.38	Recognition Equipment (H)	11.75	-0.25	-2.08
OTC	12.50	5.38	Rexon Inc. (H)	11.63	-0.13	-1.06
OTC	19.88	7.13	Seagate Technology*	15.63	0.13	0.81
NYS	78.00	29.38	Storage Technology*	67.88	1.13	1.69
NYS	30.88	16.00	Tektronix Inc.	17.88	0.88	5.15
OTC	1.06	0.16	Televideo Systems (H)	1.00	0.13	14.29
NYS	82.25	51.50	Xerox Corp. (H)	75.25	-1.13	-1.47

Services Off 0.24%

Exch	52-Week Range			March 13 Close	Wk Net Change	Wk Pct Change
OTC	28.50	16.25	American Mgmt. Systems*	21.25	-0.25	-1.16
NYS	5.38	2.88	Anacomp Inc.	4.75	-0.13	-2.56
OTC	19.00	12.00	Analysts Int'l (H)	18.00	0.50	2.86
NYS	49.00	29.50	Auto Data Processing*	44.88	1.63	3.76
NYS	26.78	15.13	Comdisco Inc.* (L)	15.50	-0.63	-3.88
OTC	14.50	7.75	Computer Horizons	10.00	-1.00	-9.09
NYS	84.88	52.25	Computer Sciences* (H)	75.00	1.75	2.39
NYS	11.25	7.00	Computer Task Group	9.50	0.13	1.33
OTC	19.25	7.75	Corporate Software (H)	17.25	0.00	0.00
OTC	28.75	12.00	Egghead Discount Software (H)	28.00	2.25	8.74
NYS	33.06	19.63	General Motors E (EDS)* (H)	30.38	0.44	1.46
OTC	30.38	8.88	Intelligent Electronics (H)	21.50	-1.25	-5.49
OTC	14.88	2.25	Merisel (H)	13.00	-0.25	-1.89
OTC	15.75	5.75	Microage Inc. (H)	14.00	0.00	0.00
OTC	41.25	19.50	Paychex	36.75	1.25	3.52
NYS	73.00	43.25	Policy Management Sys. (H)	69.63	3.88	5.89
NYS	41.38	18.75	Reynolds and Reynolds (H)	38.88	-0.50	-1.27
OTC	32.00	21.25	SEI Corp. (H)	29.75	-0.75	-2.46
OTC	24.38	15.75	Shared Medical Systems (H)	19.50	0.00	0.00
OTC	24.25	12.50	Sungard Data Systems (H)	21.50	0.25	1.18
NYS	6.13	1.13	Ultimate Corp.	2.75	-0.25	-8.33

Note: Teradata was acquired. General Motors completed a 2-for-1 stock split.

KEY: (H) = New annual high reached in period (L) = New annual low reached in week

* Companies tracked in Computerworld Stock Index

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COMPUTER INDUSTRY

IN BRIEF

Hello, Dali

- New York-based venture capital firm **Nazem and Co.** has signed up former Apple Computer, Inc. executive **Paul Dali** to open and head an office in Menlo Park, Calif., its first on the West Coast. Nazem's funds have seeded the likes of Cirrus Logic, Inc. and Momenta Corp.

- The Canadian Contender, also known as Ottawa-based **SHL Systemhouse, Inc.**, closed its $100 million-plus outsourcing deal with the **province of Nova Scotia** and privately owned communications player Maritime Telegraph & Telephone Co.

- A report from an internal audit at the **U.S. Environmental Protection Agency** charged EPA contractor **Computer Sciences Corp.** (CSC) with a variety of misdeeds, including double-billing, approving its own invoices, use of incorrect labor rates and charging for work not performed. The audit said CSC may have collected $13 million more last year than it was entitled to. CSC would not comment on the charges but said it was moving "to resolve all issues regarding administration of its contracts."

Prime, Bull HN bolster service offerings

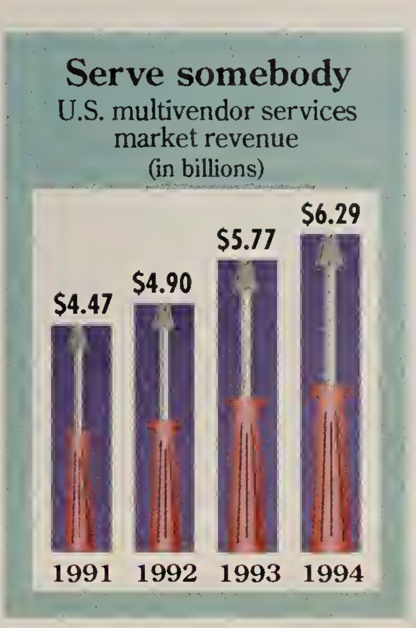
Sign pacts with Group Three Electronics, IDEA Servcom to help attract large systems integrators

BY KIM S. NASH
CW STAFF

Prime Computer, Inc. and Bull HN Information Systems, Inc. expanded their service programs last week via pacts with small companies.

Bull HN bought the services, assets and contracts of Group Three Electronics, Inc., a printer and storage products vendor in Torrance, Calif. IDEA Servcom, Inc., based in Tempe, Ariz., signed a deal with Prime to maintain personal computers and peripherals at Prime's estimated 9,000 "open systems" accounts.

Executives at Prime and Bull HN described the deals almost identically, saying the agreements complement their companies' open systems solutions.



Source: Ledgeway/Dataquest
CW Chart: Janell Genovese

"They probably do, but in a subtle way," said Jeff Kaplan, a director at Ledgeway/Dataquest, a consulting firm in Framingham, Mass.

Kaplan said Prime and Bull HN are expanding their technical field service programs to make themselves more attractive as potential partners to large systems integrators.

Often, large integrators such as IBM's Integrated Systems Solutions Corp. and Big Six consulting firms are heavy on consulting expertise, but they can lack technical know-how to tackle specific user problems, Kaplan said.

Looking to the future

Agreements such as the ones Prime and Bull HN announced last week "are a way for them to add to the practical experience of their field support people, which could be valuable to larger integrators down the road," Kaplan explained.

Bull HN will service all Group Three customers in exchange for entry into multivendor sites, which will give the company "practice servicing other vendors' equipment," Kaplan said, adding that the same goes for Prime and its agreement with IDEA Servcom.

Prime needs third-party help for PCs sold by its Computervision Corp. subsidiary because alone, it is "not able to be as competitive on price or as effective" as IDEA Servcom, said Joseph Capobianco, senior manager at Prime's value-added services department. Prime already services Sun Microsystems, Inc. equipment, which the company remarkets through Computervision, he said.

IBM enlists overseas aid to boost ailing PC sales

BY CAROL HILDEBRAND
CW STAFF

The latest in IBM's efforts to pump some life into the firm's ailing personal computer business came from overseas, as the company acknowledged that it will establish an independent subsidiary to market low-cost PCs in Europe.

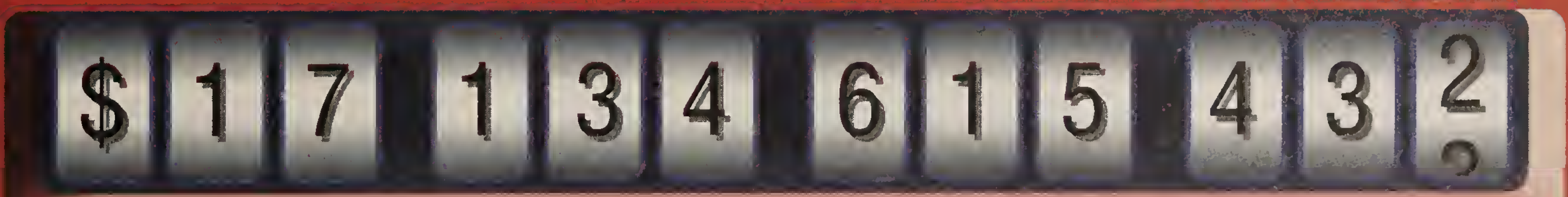
William McCracken, general manager of personal systems at IBM Europe, said the decision resulted from the exploration of several new supply and delivery schemes for entry-level boxes. Many observers interpreted the new schemes to mean a mail-order operation, among other initiatives under consideration.

Although the company refused to discuss specifics of the new operation, slated to open late in the second quarter, many expect that the new line will be made by an Asian manufacturer and will not be sold under the IBM logo. One source pointed to International Applications Solutions Pte. Ltd. (IAS), a joint venture of IBM and Singapore-based Hong Leong Corp., as a possible candidate. IAS is currently marketing a 20-MHz 80386-based box with a 40M-byte hard drive and some software bundled in, priced at about $1,600.

If the European venture is successful, chances are good that IBM will offer PC clones in the U.S., analysts said.

Offering PC clones would make IBM more attractive to customers who make purchases based primarily on price. IBM's focus on price and support come as a result of plummeting market share in its PC business. IBM has watched its market share slip from a 37% worldwide share in 1984 to today's mark of 13%, said La Jolla, Calif.-based Computer Intelligence/Infocorp.

> IF THE EUROPEAN VENTURE IS successful, chances are good that IBM will offer PC clones in the U.S.



By the end of this week Computerworld readers will have spent over $17.1 Billion on Information Technology this year — representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD
The Newspaper of IS

Source: IDG Research Services, Fall 1991

W.Y.S.I.W.Y.g.

Say again?

"Each PU Type 2 device in an SNA network must be addressed directly by the FEP to which it is defined, regardless of whether the connection is via an SDLC or LAN/WAN internetwork. In the case of large 3X74-type terminal controllers, many end-user devices can be serviced by one PU address ..."

From a Netlink, Inc. statement of direction

Was Ken Olsen driving?

Bumper sticker seen in Marlboro, Mass., only a few towns away from DEC's Maynard, Mass., headquarters: **VMS Forever!**

The art of the deal

Did you know that Charles Tandy paid nothing for Radio Shack when he acquired it in 1963? The company was virtually bankrupt, and he agreed to pay the bills.

To the heart of the matter
This 'heart' lies inside IBM's most advanced hard disk drive recording head. Only as wide as a human hair, this yoke has helped IBM scientists read and write more than 1G bit of information (or the equivalent of 100,000 double-spaced typewritten pages) onto 1 sq in. of magnetic hard disk space.

Tech Trivia

① The Pizza Time restaurant chain was started by Atari founder Nolan Bushnell. What was the name of Pizza Time's mouse robot?

② Who wrote the following books:
a. *The Art of Computer Programming*
b. *The Third Apple*
c. *The Ninth Bridgewater Treatise*

③ Ella Fitzgerald sang at this computer entrepreneur's 30th birthday. Can you name him?

④ What U.S. corporation bought the first industrial robot? General Motors, Du Pont or Martin Marietta

A Virus Poem

by Brooks Hilliard

There's Beta and Manta, Get Password and CB
Amstrad and Leningrad, F-Word and BeBe
Haifa, Messina, Enigma, Gergana
Tequila, Azuza and Nina, Vienna.
There's Smily and Shirley, Israeli and Anthrax,
And Yankee and Miky, Raubkopi, Oropax.
There's Newcom and Checksum and Boojum and Prism,
And Incom and Phantom and Planinum and Skism.
There's Scrambler and Squeaker and Joker, Disk Killer,
Filler Despoiler and Green Caterpillar.
There's Jojo, Ohio and Spanish April Fool,
Frodo and Turbo, Jerusalem Mule.
There's Sadist and Chemist and Cinderella.
Burger and Ogre and Finger and Kalah.
Azusa, Eliza, Zargosa and Sotcha,
Macedonia, Albania, Necrophilia and Gotcha.
There's Palette and Merritt and Friday the 13th,
And Saddam and Virdem and Saturday 14th.
There's Typo, Empire and Topo and Ping Pong,
Mosquito and Fire and Psycho and Lao Doung.
There's USSR and Ambulance Car
And Wonder, Surrender and Redstar and Spar
Bugares, Vorohezh, Xabaras and Flash
Microbes and Irish, Adidas and Crash.
There's Timid, New Zealand, Bloody! and Tiny DI.
There's Stupid and LoveChild and Froggie and Lehigh.
There's Stoned and Scotts Valley and Happy N.Y.
There's Cascade, Black Wizard and also Bad Guy.
There's Frere Jacques, Marauder, Invader,
Vacsina-Rybka and also Darth Vader.
There's Barcelona and Nomenkla-tara,
And then Montezuma and Hydra and Cara.
There's Music, Icelandic, Generic and Whale.
There's Lisbon and Pentagon and Phalcon and Yale,
Pirate and Mutant and Fumble and Hello.
There's Patient and Advent and Michelangelo.
That's 130 viruses, smaller and greater.
If you don't get protected, you'll lose all your data.

– Hilliard is president of a computer consulting firm in Phoenix

WYSIWYG design: Michael Siggins

ONE-LINERS
If Xerox merged with Wurlitzer, the new company would probably sell reproductive organs.

Answers to trivia:

1. Chuck E. Cheese
2. a. Donald Knuth; b. Jean Louis Gassee; c. Charles Babbage
3. Steve Jobs
4. General Motors

SOURCE: Special thanks to the Computer Museum, Boston

Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lary Zattola or Jadie Noze at (800) 343-6474. If we use your ideas, we'll send you a gift.

INSIDE LINES

Shining through

▶ Tough times in the aerospace business apparently are not slowing down technology plans at jet engine maker Pratt & Whitney. The East Hartford, Conn.-based firm plans to install a network of 2,000 Sun workstations within the next five years. Pieces of the project, dubbed Vision 2000, are already in place, a Pratt & Whitney source says.

Orient express

▶ Look for as many as 12 new passive-matrix color notebooks at Comdex/Spring '92 — many from Korean and Taiwanese clone makers, according to Steve Lair, vice president at market researcher Dataquest. Separately, users report seeing two active-matrix color notebooks from Toshiba, including one with a 486 chip inside. These products may appear at the show as well, sources say, though they would be significantly ahead of schedule.

Brute force

▶ DEC is working hard to be a factor in the PC marketplace. Industry analysts predict the company will unveil a six-processor, Intel I486-based SCO Unix box in the not-too-distant future. Some sources speculate that the system could debut as early as next month — just in time for DECworld '92 in Boston.

The customer's always right

▶ CA will answer critics' complaints about its service ethic on April 1, when it will break out about 35% of its sales force into a separate customer support group, an analyst says. The group's charge will be to address customer complaints about virtually anything — from support and service to contractual issues. A CA spokesman declined to comment.

If only Dr. Livingstone had owned one

▶ The follow-on to AT&T's Safari portable hits the market on Wednesday, sources close to NCR say. It will not only feature what one source considered super wireless communications facilities but will also mark the merger of Safari and NCR. Another source says Safari's wireless communications facilities worked inside a moving elevator that was 250 to 300 feet from its connecting PC. NCR is still debating whether to add the System 3000 name to what is tentatively called the Safari Slimline.

Wireless messaging

▶ Soft-Switch, Inc. and Ardis, the joint Motorola and IBM wireless data network company, will announce a collaboration this week to connect Soft-Switch's electronic messaging gateway products to the Ardis nationwide network. Soft-Switch will use SNAPI, its network application program interface, to link application programs via E-mail and the Ardis wireless network. The two firms are working together and with customers to develop such "store-and-forward" messaging applications for the wireless environment. A time frame for commercial products is not known.

MacWindows?

▶ How serious is Apple about getting into the Windows market? Very. The company is reportedly ready to announce several pieces of hardware, including a printer and scanner, that work on both the Macintosh and the Windows platforms.

More consortia-ware

▶ Industry analysts gathered in San Diego last week for a high-level briefing by HP. One of the likely topics was HP's imminent launch of an industry association to advance its PA-RISC technology. More consortia, anyone?

Ever notice how hard it is to line up people with skills and information with those who need them? Software maker Autodesk has noticed, and this June it plans to introduce a computerized information exchange designed to work like the NASDAQ stock market by matching bids and offers for data and services. Users will pay $50 to log on to the system, which will be carried out by a subsidiary called American Information Exchange. There will also be a fee for each transaction. One early sign-on: Lotus founder Mitch Kapor, who plans to sell consulting services. Got any news tips? Phone, fax or Compuserve News Editor Alan Alper at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively.

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157 Min-32 Sec.	67 Min-41 Sec.	183,492	$843.51

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Elapsed Time	*CPU Time*	*EXCPs*	*Job Cost*
18 Min-11 Sec.	31 Sec.	8,299	$ 29.87

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